

# Alerion

Industry-based solution  
for elevators



**Severstal**  **Metiz**

[metiz.severstal.com](http://metiz.severstal.com)

# About company

Severstal is a vertically integrated steel and steel-related mining company.

Severstal-metiz is a Russian corporate group which consolidates metalware assets of Severstal company.

Severstal-metiz is in the TOP-5 of the biggest European companies in its business segment. It has the development strategy aimed at the achievement of shared corporate objectives of Severstal.

Construction industry, oil and gas industry, automotive industry, metallurgy and machinery are principal customers of Severstal-metiz.

Being in a regular dialogue with its customers, developing partnership with suppliers and studying market demands, Severstal-metiz improves the quality of its products and services as well as develops new types of products, allowing customers to reduce operational costs.

Severstal-metiz is an environmentally safe factory, which is confirmed by an ISO 14001:2015 certificate.

Quality management system (QMS) of the Company meets the requirements of the international standard ISO 9001:2015. The Company has also obtained the International Certification Network IQNet Certificate of Conformity.



## A wide range of Severstal-metiz products has 5 product lines:

### Wire and wire products

- Wire, nails
- Cut wire
- Plaited, woven, welded meshes
- Gabions
- Fences
- Strands
- Fiber

### Wire ropes

- Special wire ropes
- Standard wire ropes
- Cable-stayed systems
- Slings

### Cold-drawn products

- Cold-drawn steel
- Wire for cold heading
- Steel shaped profiles

### Fasteners

- General purpose fasteners
- Fasteners for automotive industry
- Special fasteners
- Railway fasteners

### Others

- Consumer goods
- Spring blocks



## Export countries 2021

Armenia	Latvia
Austria	Lithuania
Azerbaijan	Moldova
Belarus	Mongolia
Belgium	Netherlands
Bulgaria	Norway
Croatia	Panama
Czech Republic	Poland
Denmark	Portugal
Ecuador	Romania
Estonia	Saudi Arabia
Finland	Serbia
France	Slovakia
Georgia	Spain
Germany	Sweden
Greece	Tajikistan
Hungary	Türkiye
Israel	Turkmenistan
Italy	UK
Kazakhstan	USA
Kyrgyzstan	Uzbekistan

# > 100 000

The number of items  
in the product line

# > 4 500

Clients number

# 20%

Russian market share

# \$95,1 million

EBITDA in 2020

# 5 500

Employees

# 42

Export countries

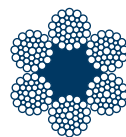


# Steel wire rope

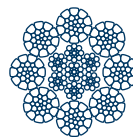
One of the main directions of Severstal-metiz is production and development of steel wire ropes.

The product line of the company includes more than 100 types of ropes, which are produced in accordance with Russian and international standards.

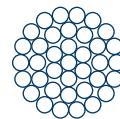
Our clients are more than 500 Russian and foreign companies operating in various business areas: from mining to the production and maintenance of elevators.



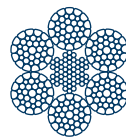
6-strand



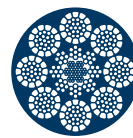
8-strand



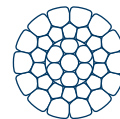
Spiral



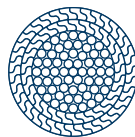
6-strand with compacted outer strands



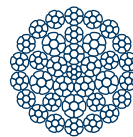
Plastic sheathed



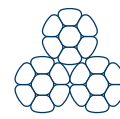
Compacted spiral



Full locked



Multistrand



3-strand

## Wire ropes production sites



## Cherepovets

- Wire ropes diameter: 0.65-65.0 mm
- Grade: 1180-2160 N/mm<sup>2</sup>
- Production capacity: ≈ 2400-2800 tons per month

## Volgograd

- Wire ropes diameter: 0.65-100.0 mm
- Grade: 1180-2160 N/mm<sup>2</sup>
- Production capacity: ≈ 3000-5500 tons per month

**1955** year

Steel wire ropes launch

**2008-2017** year

Redaelli Tecna S.p.A. is a part of Severstal-metiz

**\$23,5** million

Investments in steel wire ropes equipment in 2017-2020

## Quality control at all stages of manufacturing

Severstal-metiz is a part of the metallurgical company Severstal.

It allows us to control the rope production process from the moment the ore is mined to the moment the final product is made.

We pay special attention to the quality at every stage of production. Raw materials, wire and wire ropes go through standard compliance tests under laboratory conditions to ensure product quality control.



Beside wire ropes production we can cut them to required length and terminate with sleeves. We also help our clients with wire rope selection, based on type of equipment, breaking load and exploitation terms. Our own research and development center allows us to design any lifting products for the necessary tasks with the provision of all necessary accompanying documentation.

## Certification

The company's quality management system is certified according to international standards ISO 9001:2015, 45001:2018 and 14001:2015.



# Industry-based solution

We developed a solution for each area of use. This solution includes:

- Special ropes with improved performance and extended service life;
- Additional services;
- Technical support.

Industry-based solutions help our customers to reduce equipment downtime, to increase the safety of its work, as well as to reduce the cost of maintenance of equipment.

Customers choose our industry-based solutions for:

- Oil and gas;
- Mining;
- Production and maintenance of elevators;
- All types of cranes used in any manufacturing industry;
- Cableways.

For each of the areas of application we produce product line of special ropes with unique technical characteristics and construction.

**Alerion®** is our solution for elevator industry.

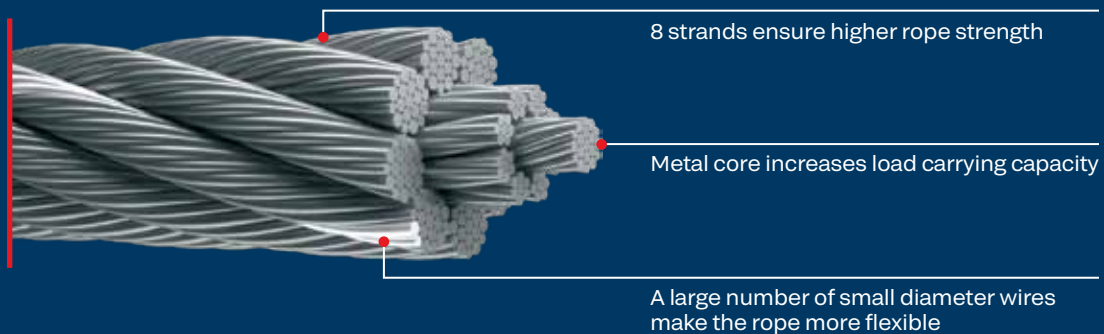
It includes 6-strand and 8-strand special ropes that we produce specially for the installation and maintenance of elevators.

For high buildings we manufacture 8x19 wire ropes with metal core.

**Alerion®** ropes are flexible, strong and durable compared to standard solution.

We select ropes for different application conditions of the equipment for the most efficient operation, in a short time we carry out delivery and provide additional services.

## Special design



# Alerion

## Industry-based solution for elevators



High-rated  
quality



Cost  
minimization



Better  
performance



More  
safety

### Advantages of Alerion MC8

- 01 Higher endurance limit resulting from increased number of wires in the rope.
- 02 High damping capacity (better vibration absorption).
- 03 Higher elasticity caused by smaller diameter of wires.
- 04 Reduced surface stress between the rope and pulleys.

### Lifting wire ropes

- **Alerion 819** (8x19S-FC)
- **Alerion MC8** (8x19W-IWRC)

### Governor ropes

- **Alerion 619** (6x19W-FC)
- **Alerion 619** (6x19S-FC)
- **Alerion 619** (6x19M-FC)

### Performance comparison

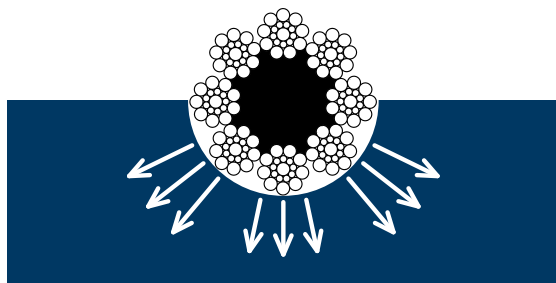
#### Alerion 819 (8x19S-FC)

Weight of 1 m rope - 0.223 kg

**MBL 29.4 kN**

Elastic elongation  $\leq 0.20\%$

Structural elongation  $\leq 0.14\%$



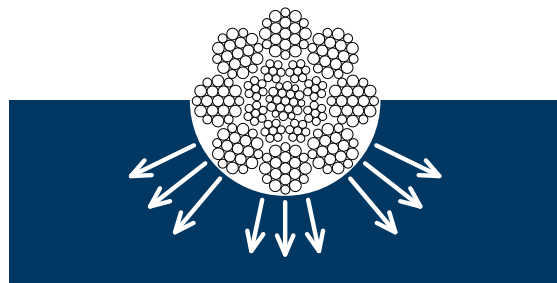
#### Alerion MC8 (8x19W-IWRC)

Weight of 1 m rope - 0.260 kg

**MBL 35.8 kN**

Elastic elongation  $\leq 0.08\%$

Structural elongation  $\leq 0.02\%$





# Alerion 619

6-strand wire rope with fiber core

**EN 12385-4 class 6x19 and 6x19M**

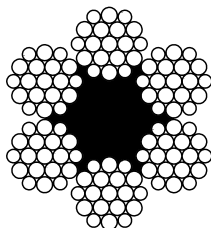
Wire ropes for overspeed governors.

## Specifications

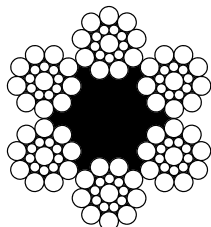
Diameter, mm	Rope weight, kg/m	Rope grade, N/mm²			
		1570	1770	1960	2160
		Minimum breaking load, kN			
6x19W-FC, 6x19S-FC					
6	0.13	-	21.1	23.4	25.7
7	0.18	-	28.7	31.8	35.0
8	0.23	33.2	37.5	41.5	45.8
9	0.29	42.1	47.4	52.5	57.8
10	0.36	52.0	58.6	64.9	71.5
11	0.43	62.9	70.9	78.5	86.5
12	0.52	74.8	84.3	93.3	102.9
13	0.61	87.8	99.0	110	121
14	0.70	102.0	115	127	140
15	0.81	117	132	146	161
16	0.92	133	150	166	183
17	1.08	150	169	187	206
18	1.16	168	190	210	232
19	1.30	187	211	234	257
20	1.44	207	234	259	286
22	1.74	251	283	313	345
6x19M-FC					
6	0.13	-	19.6	21.7	23.9
7	0.17	23.6	26.6	29.5	32.5
8	0.22	30.8	34.8	38.5	42.4
9	0.28	39.0	44.0	48.7	53.7
10	0.35	48.2	54.3	60.2	66.3
11	0.42	58.3	65.8	72.8	80.2
12	0.50	69.4	78.2	86.6	95.5
13	0.59	81.5	91.8	102	112
14	0.68	94.5	107	118	130
15	0.78	108	122	135	149
16	0.89	123	139	154	170
18	1.12	156	176	195	215
20	1.38	193	217	241	265
22	1.67	233	263	291	321



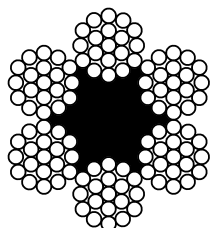
6x19W-FC



6x19S-FC



6x19M-FC





# Alerion 819

8-strand wire rope with fiber core

**EN 12385-5 class 8x19**

Lifting wire ropes for heights ≤ 30 m.

## Specifications

Diameter, mm	Rope weight, kg/m	Rope grade, N/mm²		
		1570	1370/1770	1770
		Minimum breaking load, kN		
8.0	0.22	29.4	28.1	33.2
9.0	0.28	37.3	35.6	42.0
10.0	0.34	46.0	44.0	51.9
11.0	0.41	55.7	53.2	62.8
12.0	0.49	66.2	63.3	74.7
13.0	0.57	77.7	74.3	87.6
14.0	0.67	90.2	86.1	102.0
15.0	0.77	103.0	98.8	117.0
16.0	0.87	118.0	113.0	133.0



**Alerion** Industry-based solution  
for elevators

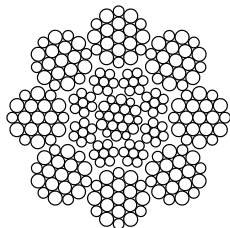
# Alerion MC8

8-strand wire rope with metal core

**EN 12385-5 class 8x19**



8x19W-IWRC



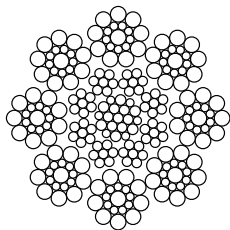
Lifting ropes for heights > 30 m  
and for elevators with gearless winches.

## Specifications

Diameter, mm	Rope weight, kg/m	Rope grade, N/mm²		
		1570	1570/1960	1770
		Minimum breaking load, kN		
8.0	0.26	35.8	42.9	40.3
9.0	0.33	45.3	54.6	51.0
10.0	0.41	55.9	69.5	63.0
11.0	0.49	67.6	83.1	76.2
12.0	0.59	80.5	98.9	90.7
13.0	0.69	94.5	114.0	106.0
14.0	0.80	110.0	133.0	124.0
15.0	0.92	126.0	151.0	142.0
16.0	1.04	143.0	173.0	161.0



8x19S-IWRC



**Alerion** Industry-based solution  
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# Service center

Our experience shows that the more accurately the rope is selected, the longer its service life is. The specialists of the service center have already helped dozens of customers in the selection and maintenance of ropes on various equipment: from cranes to drilling platforms. When working with a new object, they take into account many aspects: scope of use, equipment features, operating conditions, etc.

**To ensure the durability of ropes, the specialists of the service center provide the following services:**

- Rope selection for specific operating conditions.
- Consultations on the features of the application, mounting and operation of ropes.
- Development of special rope construction (together with the Technological department).
- Supply of experimental batches of products.
- Selection of the end fittings and fasteners.
- Technical support of the rope installation.
- Rope running time monitoring and warranty period calculation.
- Organization of seminars.

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**tel.: +7 (8202) 53-91-91**

**e-mail: [helpdesk.ssk@severstal.com](mailto:helpdesk.ssk@severstal.com)**





# Required information for steel wire ropes supply

## 1 Initial data

- Rope designation

## 2 Wire rope information

- Reference document (standard)
- Rope construction
- Grade
- Direction and type of lay
- Surface processing (bright, galvanized)
- Nominal diameter and tolerance
- Nominal length and tolerance
- MBL
- Lubricant type and code
- Requirements for spool  
(wooden, metal; painted; phytotreatment)
- Requirements for packaging

## 3 Other information

- Required certificates



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# Prestretching

Prestretching is a service that allows to minimize the residual elongation of the rope arising during its lifespan.

We use a special equipment which provides a load applied on a rope that simulates the working process on the client's equipment. All the granulations and deformations occurred in product during its manufacturing disappears after such operation. Prestretching also provides even load distribution.

Prestretching reduces the cost of putting the rope into operation, because in this case, there is no need to carry out a long preliminary running-in of the rope coming from its fitting, shortening and pulling.



Dynamic stretching for mid-diameters  
**Ø 15-35 mm**



Static stretching for big diameters  
**Ø 19-90 mm**



Lower residual elongation



Higher modulus of elasticity



Low torque



Efficient performance



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# Magnetic non-destructive testing



During production



During operation

- Only instrumental non-destructive testing can give a full assessment of the degree of damage and residual life of the rope.
- Non-destructive testing allows to detect the loss of the section of the rope, external and internal local damages and their location.
- Magnetic non-destructive testing is used in industries such as metallurgy, mining, cableways, elevators, cable-stayed bridges.



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# Tests



## Rotation resistance

Testing samples are loaded with up to 5% MBL creating conditions similar to those that occur when the rope is pulled during rope installation in order to define the number of turns. Standardized value shall not exceed 0.75 turns. This rotation rate will not have negative effect on performance properties.



## Elongation

Testing sample is loaded with 3 – 8.5% MBL. Linear deformation of wire rope section under the load (structural elongation) as well as linear deformation under no load (elastic elongation) are evaluated after 10 cycles of load.



## Fatigue life

Fatigue testing includes calculating the number of broken wires appearing after 600,000 cycles of reverse bending as well as determining the number of cycles necessary for failure (wire rope break).





## **Alerion**

**Industry-based solution  
for elevators**

### **JSC Severstal-Metiz**

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