Metal products for the oil and gas industry

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Table of Contents

01

About the Company

02

Large diameter LSAW Pipes

03

Hot rolled flat products

04

Long products

05

Metalware

About the Company

Severstal at a glance

Severstal is one of the world’s most efficient metals and mining companies, working with customers and partners to create new products and integrated solutions from steel.

The main production site of the company Cherepovets Steel Mill was opened in 1955 in the city of Cherepovets, Russia.

Our strategy is to maximize shareholder value by building a healthy and high-quality business that generates higher than market average earnings throughout the economic cycle.

Severstal is one of the leading suppliers to oil and gas companies with experience in Russia and worldwide.

Moreover, Severstal provides customers with a wide range of products, including rolled steel products for oil and gas pipes and products for LNG.

At present, our company focuses on providing customized services and packaged solutions to customers.

Severstal in Numbers

10.4
million tonnes of steel

25
assets

52
thousand employees

600
Thousand tonnes of pipes (annual capacity)

Advantages of Cooperation

Cost Efficiency

Severstal is the most cost-efficient Russian steel supplier for international companies. We attribute our cost-efficiency to these factors:
- Vertical integration of the company.

This means we have control over our whole production chain, from raw materials to finished pipe products. Severstal products comply with ISO 9001 and ISO 14001 international standards.
- Strategic location near the port.

Our main large diameter Longitudinal Submerged Arc-Welding Pipe (LSAW) production facility is strategically located next to the port facilities in St Petersburg, Russia. The location of Severstal’s asset allows to optimize delivering products by sea to our customers.

Product Packages

Severstal is able to offer not only large diameter pipes (LSAW), but also such steel products as fittings, ball-valves, and other flat and long steel products that might be required for the project. For instance, for the construction of liquefied natural gas storage and transportation facilities we can supply cryogenic steel, cryogenic rebar and other solutions.

Customized Solutions

Severstal can modify its product specifications to fit our customers’ needs, and we can do this from the very beginning of the manufacturing process. This allows us to provide our customers with best-fit solutions for their projects. Severstal has its own R&D department that is able to develop unique, tailored products and value-added engineering solutions based on specific client requirements.

Large Diameter LSAW Pipes

Large Diameter LSAW Pipes

for Onshore and Offshore Pipelines

Large diameter pipes are used for construction of oil and gas pipelines. Severstal has more than 15-year experience of producing large diameter pipes for key projects in Russia and worldwide.

Severstal's large diameter pipes producer Izhora Pipe Mill is ready to provide you highest quality with confirmation of compliance with international standards. Moreover, we are ready to offer customized solutions, including the development of new products and technologies that are strictly tailored to the requirements and specifics of each specific client's project.

Production facility of LDP, Izhora Pipe Mill, is located near St. Petersburg.

Testing equipment of Izhora Pipe Mill: NDT of plates and welded seams, X-ray, MPI, automated geometry control, hydrotest. Excellent laboratory provides various testing options, including CTOD and DWTT.

Technical Data

Outer diameter	508 – 1422 / 20 – 56 mm/in
Wall thickness	8 – 40 mm
Pipe length	9.5 - 18.3* m
Steel grade	Gr B - X100

External Coatings

- External 3LPE & 3LPP coating
- Concrete weight coating (CWC)*
- FBE, DFBE coating
- Epoxy glass coating*
- Protection Varnish and epoxy coating

Internal Flow Coatings

- Internal epoxy coating

* coatings which may be applied with the involvement of third-party organizationsc

WT (mm) / OD (mm)	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40
508	■	■	■	■	■	■	■	■	■	■	■						
609.6	■	■	■	■	■	■	■	■	■	■	■	■					
711.2	■	■	■	■	■	■	■	■	■	■	■	■	■				
812.8	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
914.4		■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
1016		■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
1066.8		■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
1219.2			■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
1422				■	■	■	■	■	■	■	■	■	■	■	■	■	■

Large Diameter Pipes

with improved cold resistance

Severstal’s large diameter pipes producer Izhora Pipe Mill is ready to provide you pipes with improved cold resistance for usage in extreme cold outside conditions.

Technical Data

Steel grade	Wall thickness, mm	Outer diameter, mm/in	Length, m	External Coatings
Up to 70	8 – 40	508 – 1422 / 20 – 56	10.5 – 18.3	External 3LPE & 3LPP coating as well as internal epoxy coating

Unique characteristics

Cold resistance (KV -52°C)	DWTT (-52°C)	CTOD (-52°C)	Operation feasibility
At least 200 J	At least 90 %	At least 0.25	Used down to – 58°

Pipes
for sour service

The pipes designed for the transportation of hydrogen sulfide-containing substances, as well as for the construction of pipelines requiring a high level of responsibility, transporting CO2 - containing substances. Available in various strength grades: X52 - X70.

Pipes must withstand high mechanical loads during installation and have resistance to operational corrosion.

Offered of products

- L245MS or BMS
- L290MS or X42MS
- L320MS or X46MS
- L360MS or X52MS
- L390MS or X56MS
- L415MS or X60MS
- L450MS or X65MS
- L485MS or X70MS
- normalized products
- up to L360NS or X52NS

Corrosion resistance testing

- Hydrogen cracking test according to NACE TM 0284
- Sulfide stress corrosion cracking according to NACE TM 0177

Coatings for pipes

External Coatings

- 2-layer polyethylene (2LPE) coating as per DIN 30670 and 3-layer polyethylene (3LPE) coating according to DIN 30670, ISO 21809-1 for onshore and offshore oil & gas pipelines with operating temperature from -60°C up to +80°.
- 3-layer polypropylene (3LPP) coating according to DIN 30678, ISO 21809-1 for onshore and offshore oil & gas pipelines with operating temperature from -20°C up to +110°.

Internal Flow Coatings

- Flow coating based on 2K epoxy painting with high dried residue content for dry sweet gas transport.
- Corrosion resistant coating based on 2K solvent free epoxy coating for transport of oil, oil products, drinking water, etc.

03

Hot rolled flat products

Hot rolled

flat products for oil & gas line pipes

Severstal produces hot rolled coils and plates for large diameter pipes production.

Hot-rolled plates

Steel grade	Thickness, mm	Width, mm	Length, mm
Gr.B-X100, L245M-L690M for sour service up to X70MS S275-S460	10 – 450	1500 – 4800	2000 – 18300

Hot rolled coils

Steel grade	Thickness, mm	Width, mm	Coil weight
Up to X70 for sour service up to X52MS S275 – S420	3 – 25	950 – 1830	up to 32 Mt

Hot rolled

flat products for OCTG pipes

Being an essential part of field infrastructure, OCTG and line pipes must be made from steel products of high and stable quality.

Severstal has a huge experience in producing flat products for OCTG and line pipes in accordance with international standards.

Severstal is able to produce almost the whole range of API steel grades in hot-rolled coils.

Technical Data

Steel grade	Width, mm	Thickness, mm
J55 and J55 upgradable, X52-X70	950 – 1700	4 – 15

Cold resistant flat products

Cold resistant flat products and pipes are used for development of oil and gas infrastructure in extreme cold weather conditions.

Severstal (Mill 5000) produces hot rolled plates with high quality for extremely cold conditions.

Technical Data

Steel grade	Standard	Thickness, mm	Length, mm	Width, mm
Up to X70	API 2H, ISO 3183, DNV	10 – 45	Up to 18000	1200 – 4400

Unique characteristics

Cold resistance (KV-52°)	at least 200 J
DWTT (-52°)	at least 90%
CTOD (-52°)	at least 0.25

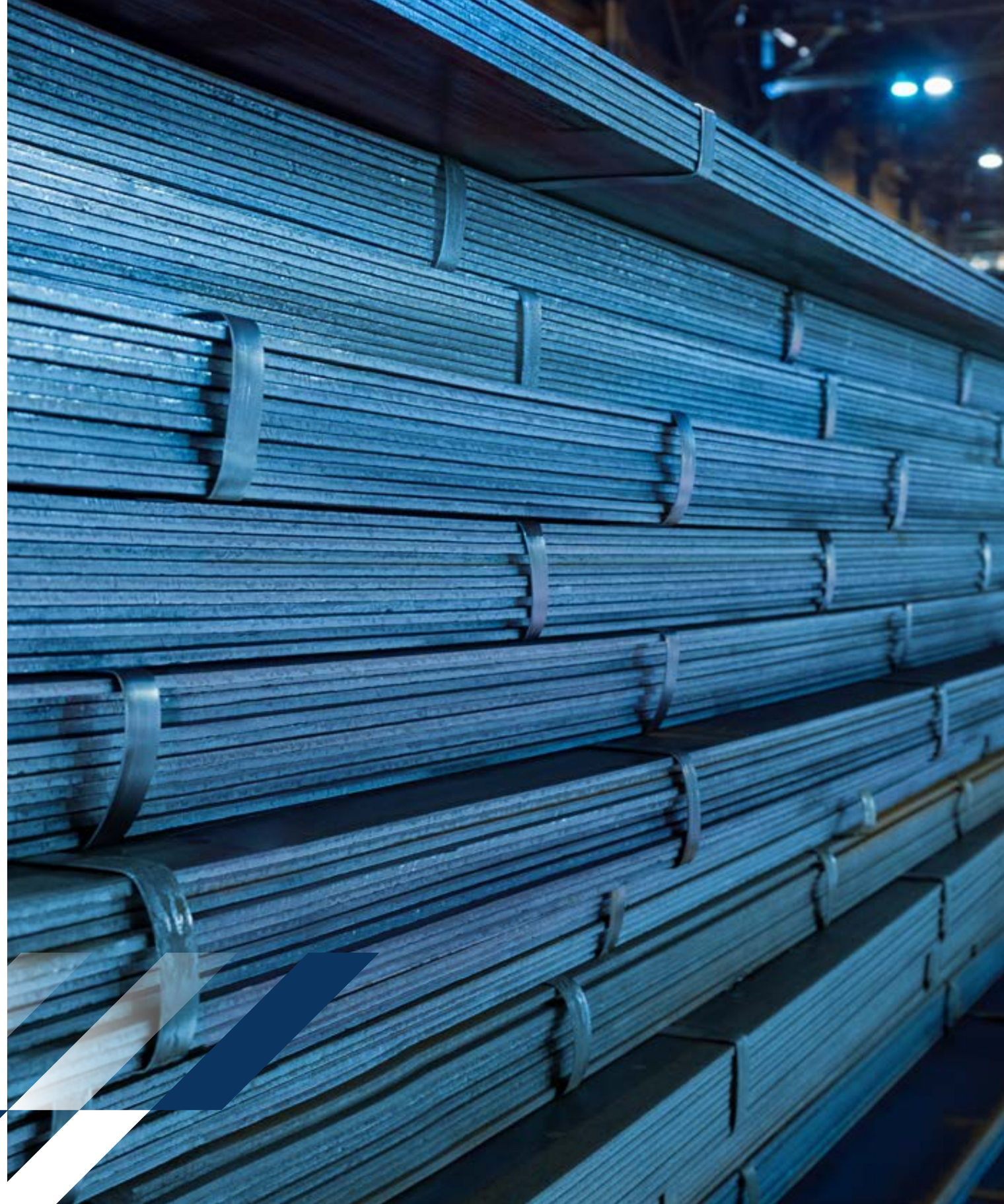
Hot rolled plates

for offshore construction

Severstal produces hot rolled plates for stationary marine installations.

Technical Data

Steel grade	Wall thickness, mm	Width, mm	Length, mm
S355G10+N	8 – 100	2000 – 18300	1500 – 4600



Cryonix X7Ni9

Cryogenic flat products

Cold resistant low-carbon steel X7Ni9 with 9% nickel according to EN 10028-4.

It has high cold resistance at low temperatures (down to minus 196 °C) and is designed for inner shell casing of LNG storage tanks.

Additional operations

Rolled products are additionally processed using high-tech equipment:

- shot blasting
- rolling
- forming
- edge processing for further welding
- primer application

Customer receives a ready-for-installation article

Advantages

High strength combined with ductility

These properties are achieved thanks to a perfectly balanced composition of chemical elements and a lower content of harmful impurities and gases.

Improved impact strength (lower temperature of ductilebrittle transition)

At least 100 J KV in longitudinal direction

Certification in accordance with European quality standards and regulations

Product certification for compliance with European Directive 2014/68/EU at TÜV Rheinland Industrie Service GmbH

Technical Data

Thickness, mm	Width, mm	Length, mm	Yield strength, 0.2%, MPa	Tensile strength, MPa	Elongation, %	KV at -196°C, J	Delivery condition
8 - 50	up to 2.500	up to 12.100	≥ 585 (t ≤ 30) ≥ 575 (30 < t ≤ 50) t – thickness, mm	690 - 820	≥ 18	(⊥) ≥ 80, (II) ≥ 100	+QT*

* Delivery conditions + N + NT are also possible for nominal thickness <15 mm

Flat steel

for construction

Severstal has been manufacturing and supplying products for construction industry since 1960.

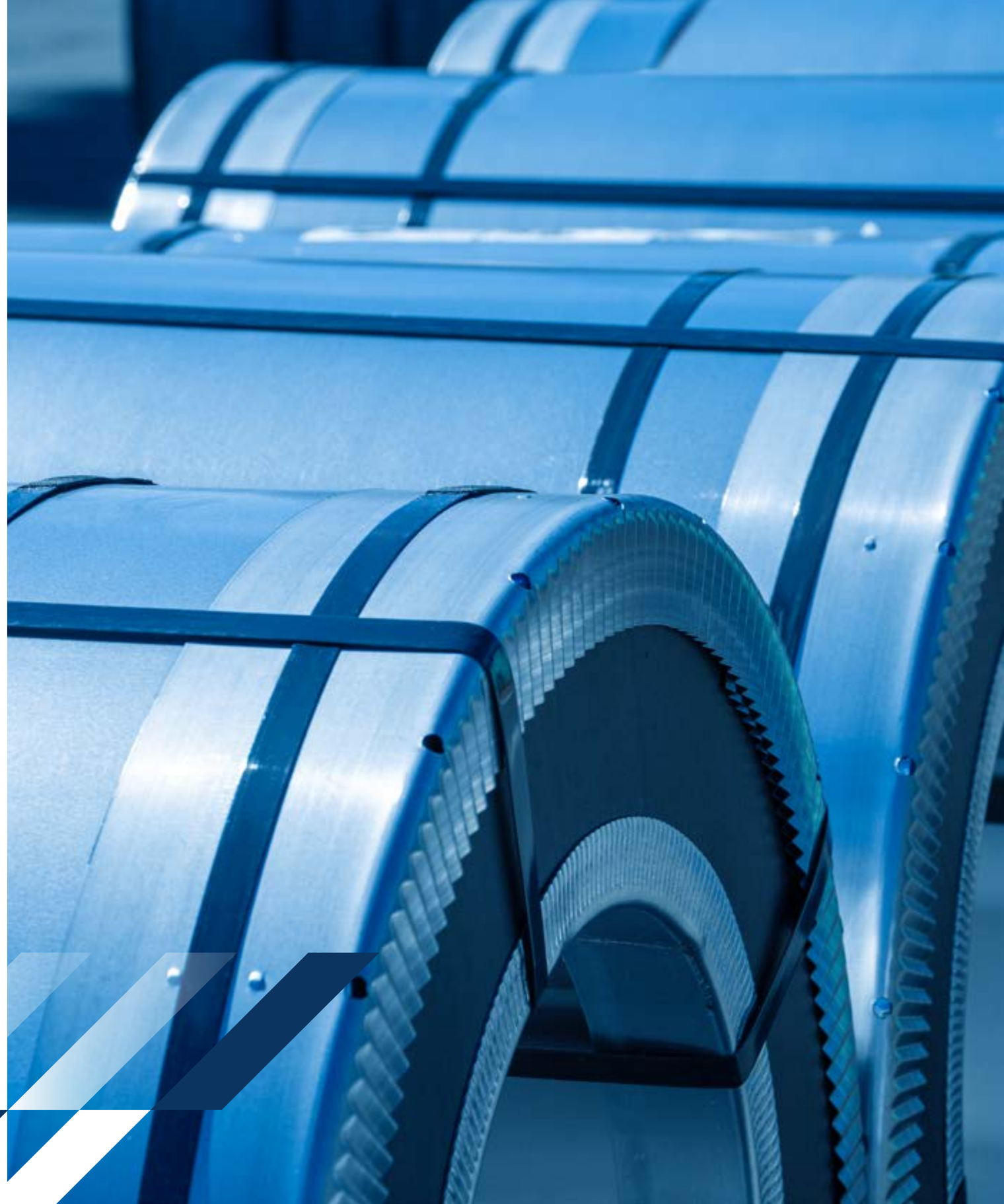
Our key priority is the comprehensive approach: from the design stage to construction, Severstal is ready to support its clients by providing technical consulting and developing new products for the customers' needs.

Technical Data

Steel grade	Standard	Thickness, mm	Length, mm	Width, mm
S235 to S690	EN 10025, EN 10225+CE+PED	12 – 150	2000 – 18000	1200 – 4600

Unique characteristics

Cold resistance (KV-52°) at least 56 J.



Flat products

for shipbuilding

Technical Data

Steel grade	Thickness, mm	Width, mm	Length, mm	Standard
Hot rolled steel for shipbuilding	10 – 70	1200 – 4600	2000 – 18000	GOST R 52927 (PMPC)

Unique characteristics

Stratified explosion resistance (-40°) Z, W, Arc (for the thickness of up to 70 mm).

04

Long products

Reinforcing bars

for construction

End use: reinforcement of concrete structures

Construction of:

- nuclear power plants, hydroelectric power stations, etc.
- transport infrastructure facilities: bridges and overpasses, subways, tunnels, ports, airports
- industrial buildings and structures
- residential buildings made of monolithic and prefabricated reinforced concrete

Rebars for special purpose facilities

Armanorma A600C

A new generation of alloyed rebar with a unique combination of strength and ductility.

- recommended for use in seismically active regions
- guarantees the strength of buildings and structures down to -100°C
- guarantees additional fire resistance of the structure, the temperature of the beginning of softening is + 700 °C
- reduces the metal consumption of structures while maintaining their reliability

Cryonix Ak500

Special cold-resistant type of reinforcing bars are used for reinforcement in concrete structures to be operated at low and extremely low temperatures in accordance with EN 14620.

- Retains its properties at a temperature of -165 °C.
- Ensures long-term operation of buildings and structures
- Guarantees high product quality due to stable chemical composition

Steel grade/ strength class	Yield strength σy, N/mm²	Tensile strength, σt, N/mm²	Elongation, %	
			δ5	δmax
A240S	240	380	25,0	-
A400S	390	590	16,0	5,0
A500S	500	600	14,0	2,5
A500SN	500	600	16,0	5,0
A500SNU				
A500SE	500	600	16,0	5,0
A500SEU				
A600S Armanorma	650	740	14,0	4,5
A600S	600	700	12,0	2,5
A800R	800	1 000	8,0	2,5
35GS; 25G2S (class A-III)	390	590	14,0	-

Diameter: 6, 8, 10, 12, 14, 16, 18, 20, 22, 25, 28, 32, 36, 40 mm

Cold formed welded structural sections

Circular sections

Technical Data

Steel grade	Standard	Wall thickness, mm	Outer dimensions, mm
S235 – S700	EN 10219+CE, EN 10220	3 – 16	159 – 426

Rectangular sections

Technical Data

Steel grade	Standard	Wall thickness, m	Outer dimensions, mm
S235 – S700	EN 10219+CE, EN 10220	3 – 16	120 x 80 – 350 x 250

05

Metalware

The world’s first strand

for heavy lifting produced by Severstal-metiz

Strand jacking is an installation method used in heavy industry. The load is secured by rigging equipment, which is connected to a set of steel cables («strands»).

The strand jack pulls the strands and lifts the load. If numerous strand jacks are assembled together, they can lift thousands of tonnes of load.

There are three pillars of strand jacking:

- Quality of strand jacks and their components
- Qualification and expertise of the company perfoming the work
- Quality of strands

Severstal-metiz met the world’s leading heavy lifting companies and collected the specific parameters of strands most commonly used for heavy lifting process. We found out that most of the strands that are currently produced are designed for posttension, whereas heavy lifting companies need a different product. So we created it. And we are happy to present an optimized strand:

Severstal-metiz special heavy lifting strands are 18 and 18.2 mm compacted strands with the 1860 MPa Nominal Tensile Strength. The characteristics of this strand exceed those provided by BS and EN standards. It features:

- Enhanced safety
- Higher resistance to surface damage
- Better performance for the reuse of strands

Special wire ropes

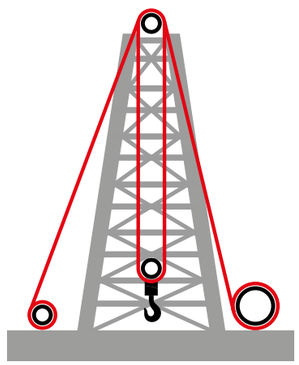
for oil & gas industry

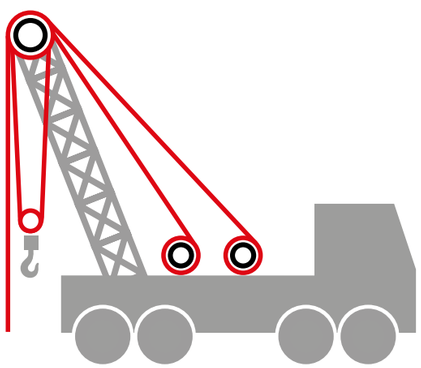
We developed a product line of special wire ropes called Octopus® with unique characteristics and extended life.

Advantages of Octopus® Wire Ropes

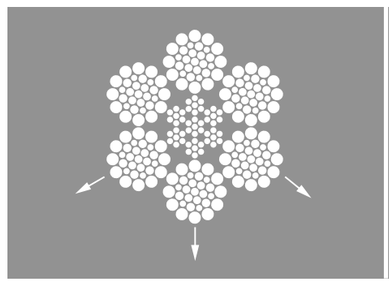
- high flexibility combined with wear resistance
- low-temperature operation
- exact diameter match
- lower impact of dynamic loads on the rope

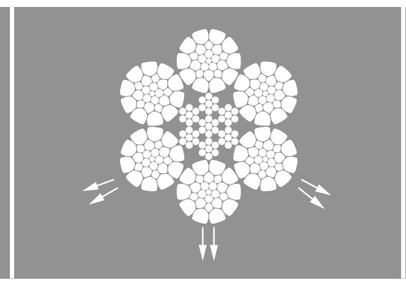
Drilling rigs and mobile drilling rigs. Drilling line

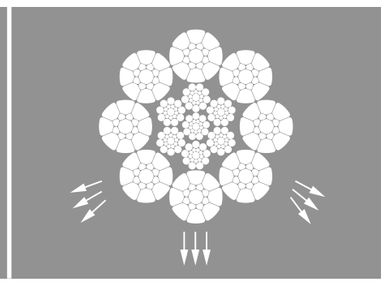




GOST 16853-88 (6x31WS-IWRC)	Octopus 6K (6xK26WS-IWRC)	Octopus 817K (8xK17S-IWRC)
01 Diameter: 25.0 mm	01 Diameter: 25.0 mm	01 Diameter: 25.0 mm
02 Weight: 2.66 kg/m	02 Weight: 2.72 kg/m	02 Weight: 2.78 kg/m
03 Grade: 1770 N/mm²	03 Grade: 1770 N/mm²	03 Grade: 1770 N/mm²
04 Total breaking load: 531 kN	04 Total breaking load: 542 kN	04 Total breaking load: 548 kN







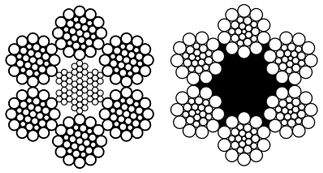
Octopus 6

STO 71915393-TU 068-2008

6-Strand Drill Line

Construction
- 6x26 (1+5+5/5+10) + 1 fiber core
- 6x26 (1+5+5/5+10) + 7x7 (1+6)

Diameter: 25 – 38 mm
Advantages in comparison with standard solutions
- increased abrasion resistance
- high flexibility
- lower impact of dynamic loads on the rope



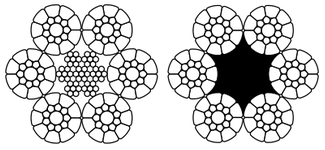
Octopus 6K

STO 71915393-TU 068-2008

6-Strand Drill Line with Compacted Outer Strands

Construction
- 6x26 (1+5+5/5+10) + 1 fiber core
- 6x26 (1+5+5/5+10) + 7x7 (1+6)

Diameter: 25 – 38 mm
Advantages in comparison with standard solutions
- increased abrasion resistance
- high flexibility
- lower impact of dynamic loads on the rope



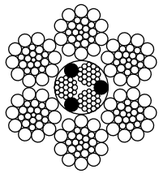
Octopus 626

STO 71915393-TU 049-2007

6-Strand Drill Line with Mixed Core

Construction
- 6x26 (1+5+5/5+10)+3x19 (1+6+6/6)+3 fiber fillers

Diameter: 25 – 38 mm
Advantages in comparison with standard solutions
- increased abrasion resistance
- high flexibility
- lower impact of dynamic loads on the rope



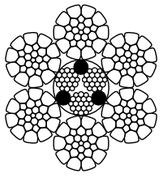
Octopus 626K

STO 71915393-TU 049-2007

6-Strand Drill Line
with Compacted Outer Strands & Mixed Core

Construction
- 6x26 (1+5+5/5+10)+3x19 (1+6+6/6)+3 fiber fillers

Diameter: 25 – 38 mm
Advantages in comparison with standard solutions
- increased abrasion resistance
- high flexibility
- lower impact of dynamic loads on the rope

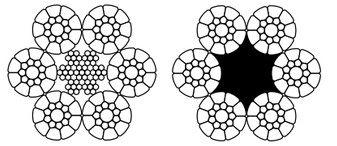


Octopus 619K

6-Strand Drill Line with Compacted Outer Strands

Construction
- 6x19 (1+9+9) + 1 fiber core
- 6x19 (1+9+9) + 7x7 (1+6)

Diameter: 25.4 – 38.1 mm
- Wire ropes are manufactured in accordance with therequirements of American Petroleum Institute API 9A;
- Stricter diameter tolerances.

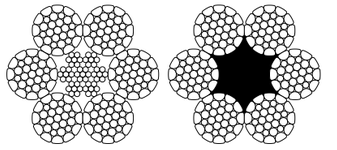


Octopus 631K

6-Strand Drill Line with Compacted Outer Strands

Construction
- 6x31 (1+6+6/6+12) + 1 fiber core
- 6x31 (1+6+6/6+12) + 7x7 (1+6)

Diameter: 25.4 – 38.1 mm
- Wire ropes are manufactured in accordance with the requirements of American Petroleum Institute API 9A;
- Stricter diameter tolerances.



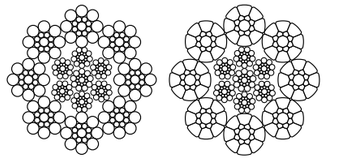
Octopus 817 and 817K

STO 71915393-TU 072-2009

8-Strand Drill Line

Construction
- 8x17 (1+8+8)+6x19 (1+9+9)+1x19 (1+9+9)

Diameter: 25 – 38 mm
Advantages in comparison with standard solutions
- higher flexibility in comparison with 6-strand wire ropes
- high strength
- reduced friction between outer wires of strands and pulley groove surface



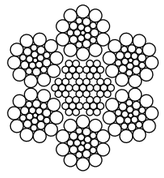
Octopus 826K

STO 71915393-TU 051-2007

8-Strand Drill Line with Compacted Outer Strands with Compacted Outer Strands & Mixed Core

Construction
- 8x26 (1+5+5/5+10) + 6x17 (1+8+8) + 1x17 (1+8+8)

Diameter: 25 – 38 mm
Advantages in comparison with standard solutions
- increased wire abrasion resistance;
- less pulley groove wear;
- improved strength characteristics;
- increased resistance against transverse crushing.



Contacts

Cherepovets Steel Mill
Steel production
30 Mira street, Cherepovets, Vologda Oblast,
162608, Russia
+7 (8202) 53-09-00
severstal@severstal.com
severstal.com

Izhora Pipe Mill
Large diameter pipes
Izhora Plants Industrial Zone, 90, Litera D,
Kolpino, Saint-Petersburg,
196951, Russia
+7 (812) 448-48-24
pipe@severstal.com
severstal.com/eng/energy

Severstal-metiz
Metalware production
1/33, 50-letiya Oktyabrya street, Cherepovets,
Vologda Oblast, 162600, Russia
+7 (8202) 53-87-66
info@severstalmetiz.com
severstalmetiz.com

Notes