



**WAYLAND
TECHNOLOGIES
GROUP**



Product catalog

Israel



Contents

2020 version

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Color code

| Rail type | |
|-----------|--------------------------------|
| OR50 | |
| OR65 | New products are marked yellow |

About EVRAZ

EVRAZ is a vertically-integrated steel and mining company with business operations in Russian Federation, the USA, Canada, the Czech Republic, Israel and Kazakhstan.

EVRAZ is among the top steel producers in the world. A significant portion of the Company's internal consumption of iron ore and coking coal is covered by its mining operations. The Group is listed on the London Stock Exchange and is a constituent of the FTSE 100 index.

EVRAZ is a leading player at the rail market of the Russian Federation and North America and one of the main manufacturers of railroad wheels, a leading manufacturer of rolled steel for infrastructure projects.

Certificates

High quality of EVRAZ products is proven by numerous certificates.

The complete list of the product and process conformity certificates, certificates of the management systems compliance may be found on the Company representative web-site.

Our Representative in Israel is Wayland Technology & Marketing Ltd.

www.waylandtec.com



No 1

rail manufacturer in the Russian and North American markets

No 1

rolled steel and I-beam manufacturer in the Russian market

No 1

large diameter pipe manufacturer in the Russian and North American markets



Global steelmaking and mining company

- We are among the World's 30 top steel manufacturers
- Key assets in Russia and America
- A constituent of the FTSE-100 index
- Sales to more than 70 countries worldwide

Minimum costs at all production stages

- Self-coverage in iron ore - 70%, in coal - 221%
- A leader among the coking coal makers in Russia and the World's top 5

Financial and operating highlights (as of 2020 Year-End)

| Revenue US\$ million | EBITDA US\$ million | EBITDA margin % | CAPEX ¹ US\$ million |
|-------------------------|------------------------|--------------------|------------------------------------|
| 9,754 | 2,212 | 22.7 | 657 |



Steel

13,630 kt



Iron ore products

14,205 kt



Coking coal

20,653 kt



Steel products²

12,768 kt



Vanadium slag³

19,533 mtV

¹ Including payments on deferred terms recognised in financing activities;

² Net of re-rolled volumes;

³ In tonnes of pure vanadium.

Transport products

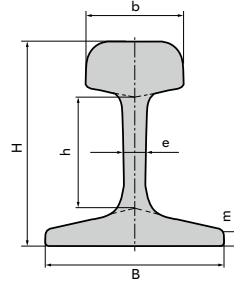
- Innovative wheels by EVRAZ outclass peer products in thermal stability and wear resistance.
- EVRAZ is a world leader in the production of rails.

We analyze world
experience and
implement best
practices



Railway rails

The rails are manufactured at the rail plant of EVRAZ ZSMK and at the rail and structural steel mill of EVRAZ NTMK.



Main rail dimensions

| Rail type | Reference document | 1 m weight, kg | Cross sectional dimensions, mm | | | | | Manufacturer | |
|-----------|--|----------------|--------------------------------|--------------|---------------|--------------------|------------------|--------------|--------------------------|
| | | | rail depth, H | web depth, h | head width, b | base/foot width, B | web thickness, e | | base blade height, m |
| R65 | GOST R 51685-2013 TU 0921-276-01124323-2012 TU 0921-293-05757676-2016 TU 24.10.75.111-298-05757676-2017 | 64.88 | 180 | 105 | 74.59 | 150 | 18 | 11.25 | EVRAZ ZSMK EVRAZ NTMK |
| R50 | GOST R 51685-2013 | 51.8 | 152 | 83 | 71.59 | 132 | 16 | 10.5 | EVRAZ ZSMK |
| OR65 | GOST R 55820-2013 | 81.17 | 140 | | 77.5 | 132 | 58 | 18 | |
| OR50 | | 64.06 | 112 | | 74 | 132 | 58 | 16 | |
| UR65 | TS 05757676-44-2017 | 84.70 | 180 | | 97.5 | 150 | 30 | 12.7 | |
| 49E1 | EN 13674-1:2011+A1:2017 | 49.39 | 149 | 70 | 67 | 125 | 14 | 10.5 | |
| 49E5 | | 49.13 | 149 | 70 | 67 | 125 | 14 | 10.5 | |
| 50E6 | | 50.90 | 153 | 76 | 65 | 140 | 15.5 | 11.2 | |
| 54E1 | | 54.77 | 159 | 79.4 | 70 | 140 | 16 | 11 | |
| 54E4 | | 54.31 | 154 | 70 | 67 | 125 | 16 | 12 | |
| 60E1 | | 60.21 | 172 | 89.5 | 72 | 150 | 16.5 | 11.5 | |
| 60E2 | | 60.03 | 172 | 89.5 | 72 | 150 | 16.5 | 11.5 | |
| 90RE | | 44.65 | 142.88 | 80.17 | 65.09 | 130.18 | 14.29 | 9.13 | |
| 115RE | AREMA 2020 | 57.29 | 168.28 | 96.84 | 69.01 | 139.7 | 15.88 | 11.11 | |
| 136RE | | 67.90 | 185.74 | 106.36 | 74.61 | 152.40 | 17.47 | 11.11 | |
| 60E1A1 | EN 13674-2:2006+A1:2010 | 72.97 | 134 | | 72 | 140 | 44 | 20 | |
| 50 kgN | KS R 9106:2006R | 50.4 | 153 | 74 | 65.07 | 127 | 15 | 12.15 | |
| 60 kgKR | KS R 9106:2006R | 60.58 | 174 | 94.9 | 65 | 145 | 16.5 | 11.98 | |

Rail types manufactured by EVRAZ NTMK

| Rail type | Application | Steel grade, category | Product length, m |
|---|--|------------------------|-------------------|
| R50 R65 | Rails for jointed tracks, continuous welded tracks and turnout switches. | K76F OT350 NT260 | 25 and shorter |
| R50 R65 for underground/ subway rail systems | Raw rails for underground/subway lines. | K76F NT260 | 25 |

25-m rails are shipped by on two railcars bridged together.

NT category – raw rails;
OT category – heat hardened rails, bulk quenched and tempered.

Rail types manufactured by EVRAZ ZSMK

| Rail type | Application | Steel grade, category | Product length, m |
|---|--|---|---------------------------------|
| R65 R50 | DT350: direct head-hardened rails for general applications. NT260: standard strength raw rails for general applications. Intended for jointed tracks, continuous welded tracks and turnout switches. | E76HF (DT350) E76F (NT260) | 12.5, 25, 100, 18 to 24.5 |
| R65 for special applications | DT350SS: rails designed for speeds up to 250 km/hr, intended for application primarily in the high speed combined traffic lines. Enhanced geometry rails. | E76HF (DT350SS) | 25, 100 |
| | DT350NN: rails for ultra low temperature applications primarily intended to operate in subzero climatic regions. | E76HAF (DT350NN) | 25 |
| | DT370IK: rails of enhanced wear resistance and contact fatigue strength for applications in 600-m and shorter railway curves. DT400IK: rails of enhanced wear resistance and contact fatigue strength for applications in tangent tracks for speeds up to 200 km/hour and curves with no tonnage restrictions, steel grade E90HAF, rail length 25 m. DT350VS: rails for high-speed passenger traffic, steel grade E76HF, rail length 25 m. | E90HAF (DT370IK) | 25, 100 |
| R65 R50 for underground/ subway rail systems | Raw rails for underground/subway lines. | E76F (NT260) | 25 |
| OR65 OR50 | Switch point rails types OR50 and OR65 are used in the general interchange and non-public wide gage track structures, rail category NT260. | E73F | 13,110, 10,790, 8,340, 6,555 mm |
| | Switch point rails type OR65 are used in the general interchange track structures, rail category NT320. | E76HSF | |
| UR65 | The rails are intended to fabricate railway junctions and crossings/frogs. | E76F | 10.05 |
| 49E1 49E5 50E6 54E1 54E4 60E1 60E2 | The rails are intended for normal and high speed railway traffic. | R260 R350HT 900A (for 54E1) B76 (for 60E1) 1080NN (for 60E1) G2HH (for 60E1) | 18, 25 |
| 90RE 115RE 136RE | The rails are intended for railway track. | Standard-, medium-, high-strength rails | 24, 25 |
| RP65 RP50 | The rails are intended for approach/branch tracks and service lanes of non-public use for industrial railway applications. | E76HF (DT350) E76F (NT260) | 12.5, 25 |

25-m rails are shipped on two railcars bridged together. The rail plant of EVRAZ ZSMK manufactures head-hardened rails up to 100 m long.

100-m rails are also head-hardened.

NT category – raw rails;
SS category – rails for combined high-speed traffic;
IK category – high wear resistance and contact fatigue strength;
NN category – ultra low temperature applications.

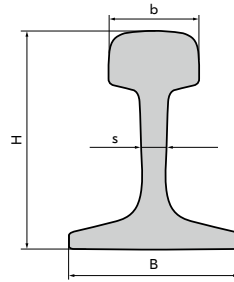
Wide-gage head-hardened railway rails type R65

The rails are manufactured at the rail plant of EVRAZ ZSMK. Intended for operation in the general interchange and non-public railway tracks.

Direct head-hardened railway rails type R65 category DT350 for general interchange applications.

Direct head-hardened railway rails type R65 for special applications:

- DT350SS category: rails designed for speeds up to 250 km/h, intended for application primarily in the high speed combined traffic lines. Enhanced-geometry rails;
- DT350NN category: rails for ultra low temperature applications primarily intended for operation in subzero climatic regions;
- DT370IK category: rails of high wear resistance and contact fatigue endurance for applications in 600-m and shorter railway curves;
- DT400IK category: rails of enhanced wear resistance and contact fatigue strength for applications in tangent tracks for speeds up to 200 km/hour and curves with no tonnage restrictions;
- DT350VS category: rails for high-speed passenger traffic.



Main rail dimensions

| Rail type | Reference document | H, mm | B, mm | b, mm | S, mm |
|-----------|--|-------|-------|-------|-------|
| R65 | GOST R 51685-2013 TU 0921-276-01124323-2012 TU 0921-293-05757676-2016 TU 24.10.75.111-298-05757676-2017 | 180 | 150 | 74.59 | 18 |

Steel chemical composition

| Rail type | Steel grade | Reference document | Element mass fraction, % | | | | | | | |
|-----------|--------------|--|--------------------------|--------------|--------------|--------------|--------------|-------|-------|-------|
| | | | C | Mn | Si | V | Cr | P | S | Al |
| DT350 | E76HF | GOST R 51685-2013 TU 0921-276-01124323-2012 TU 0921-293-05757676-2016 TU 24.10.75.111-298-05757676-2017 | 0.71 to 0.82 | 0.75 to 1.25 | 0.25 to 0.60 | 0.03 to 0.15 | 0.20 to 0.80 | 0.020 | 0.020 | 0.004 |
| DT350SS | | | 0.83 to 0.95 | | | 0.08 to 0.15 | 0.20 to 0.60 | | | |
| DT350NN | 0.71 to 0.82 | | 0.03 to 0.15 | 0.20 to 0.80 | | | | | | |
| DT370IK | 0.71 to 0.82 | | 0.03 to 0.15 | 0.20 to 0.80 | | | | | | |
| DT400IK | 0.71 to 0.82 | | 0.03 to 0.15 | 0.20 to 0.80 | | | | | | |
| DT350VS | E76HF | | 0.71 to 0.82 | 0.75 to 1.25 | 0.25 to 0.60 | 0.03 to 0.15 | 0.20 to 0.80 | 0.020 | 0.020 | 0.004 |

Mechanical properties

| Rail type | Reference document | Ultimate resistance, N/mm ² | Yield stress (yield point), N/mm ² | Elongation, % | Area reduction, % | Impact strength, J/cm ² | Running surface hardness, HB |
|----------------------|--|--|---|---------------|-------------------|------------------------------------|------------------------------|
| | | at least | | | | | |
| DT350 | TU 0921-276-01124323-2012 GOST R 51685-2013 TU 0921-293-05757676-2016 TU 24.10.75.111-298-05757676-2017 | 1,240 | 800 | 9.0 | 25.0 | 15 | 363 to 401 |
| DT350SS | | | | | 14.0 | | 370 to 409 |
| DT350NN ¹ | | 18 | 400 to 450 | | | | |
| DT370IK | | 1,300 | 870 | | 14.0 | | 370 to 409 |
| DT400IK | | 1,350 | 900 | | 18 | | 400 to 450 |
| DT350VS | | 1,180 | 800 | 25.0 | | 352 to 405 | |

Product length

12.5 m and 25 m, with or without bolt holes, 100-m rails without bolt holes.

Note:

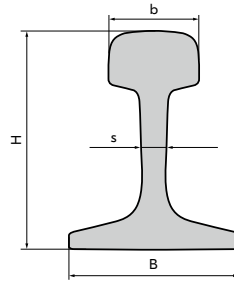
1. Impact strength for rails of DT350NN category is measured on samples at minus 60 °C.

Wide-gage raw railway rails types R50, R65

The rails are manufactured at the rail plant of EVRAZ ZSMK and at the rail and structural steel mill of EVRAZ NTMK.

Intended for underground/subway lines and turnout switches.

The rails are supplied of NT260 quality category: raw, normal strength for general use.



Main rail dimensions

| Rail type | Reference document | H, mm | B, mm | b, mm | S, mm |
|-----------|--------------------|-------|-------|-------|-------|
| R50 | GOST R 51685-2013 | 152 | 132 | 71.59 | 16 |
| R65 | | 180 | 150 | 74.59 | 18 |

Steel chemical composition

| Steel grade | Reference document | Element mass fraction, % | | | | | | |
|--------------|--------------------|--------------------------|--------------|--------------|--------------|-------|-------|-------|
| | | C | Mn | Si | V | P | S | Al |
| K76F E76F | GOST R 51685-2013 | 0.71 to 0.82 | 0.75 to 1.25 | 0.25 to 0.60 | 0.03 to 0.15 | 0.020 | 0.020 | 0.004 |

Mechanical properties

| Rail type | Reference document | Ultimate resistance, N/mm ² | Yield stress (yield point), N/mm ² | Elongation, % | Running surface hardness, HB |
|-----------|--------------------|--|---|---------------|------------------------------|
| | | at least | | | |
| NT260 | GOST R 51685-2013 | 900 | 500 | 8.0 | 262 to 321 |

Product length

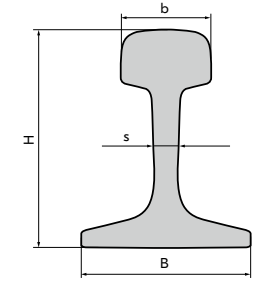
12.5 m and 25 m, with or without bolt holes.

Wide-gage bulk hardened railway rail types R50, R65

The rails are manufactured at the rail and structural steel mill of EVRAZ NTMK.

Intended for operation in the railway tracks of general interchange and non-public use and for making turnout switches.

The rails are supplied of OT350 quality class: heat hardened, bulk quenched and tempered.



Main rail dimensions

| Rail type | Reference document | H, mm | B, mm | b, mm | S, mm |
|-----------|--------------------|-------|-------|-------|-------|
| R50 | GOST R 51685-2013 | 152 | 132 | 71.59 | 16 |
| R65 | | 180 | 150 | 74.59 | 18 |

Steel chemical composition

| Steel grade | Reference document | Element mass fraction, % | | | | | | |
|-------------|--------------------|--------------------------|--------------|--------------|--------------|-------|-------|-------|
| | | C | Mn | Si | V | P | S | Al |
| K76F | GOST R 51685-2013 | 0.71 to 0.82 | 0.75 to 1.25 | 0.25 to 0.60 | 0.03 to 0.15 | 0.020 | 0.020 | 0.004 |

Mechanical properties

| Rail type | Reference document | Ultimate resistance, N/mm ² | Yield stress (yield point), N/mm ² | Elongation, % | Area reduction, % | Impact strength, J/cm ² | Running surface hardness, HB |
|-----------|--------------------|--|---|---------------|-------------------|------------------------------------|------------------------------|
| | | at least | | | | | |
| OT350 | GOST R 51685-2013 | 1,180 | 800 | 8.0 | 25.0 | 25 | 352 to 405 |

Product length

12.5 m and 25 m, with or without bolt holes.

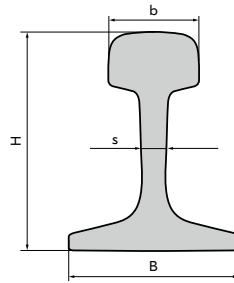
Rail types RP50, RP65 for industrial and service railway applications

The rails are manufactured at the rail plant of EVRAZ ZSMK and at the rail and structural steel mill of EVRAZ NTMK.

The rails are intended for industrial tracks and turnout switches manufactured under GOST R 51045-2014.

Supplied rails can be of the quality classes below:

- NT260: raw rails as per GOST R 51045-2014;
- DT350: direct head-hardened railway rails for general interchange applications as per GOST R 51045-2014;
- OT350: heat hardened rails, bulk quenched and tempered.



Main rail dimensions

| Rail type | Reference document | H, mm | B, mm | b, mm | S, mm |
|-----------|--------------------|-------|-------|-------|-------|
| RP50 | GOST R 51045-2014 | 152 | 132 | 71.59 | 16 |
| RP65 | | 180 | 150 | 74.59 | 18 |

Steel chemical composition

| Steel grade | Reference document | Element mass fraction, % | | | | | | | |
|--------------|--------------------|--------------------------|--------------|--------------|--------------------|--------------------|-------|-------|-------|
| | | C | Mn | Si | V | Cr | P | S | Al |
| E76F K76F | GOST R 51045-2014 | 0.71 to 0.84 | 0.75 to 1.25 | 0.18 to 0.60 | 0.03 to 0.15 | not to exceed 0.30 | 0.025 | 0.025 | 0.005 |
| E76HF | | 0.71 to 0.82 | | 0.25 to 0.60 | not to exceed 0.15 | 0.20 to 0.80 | | | |

Mechanical properties

| Rail type | Reference document | Ultimate resistance, N/mm ² | Elongation, % | Impact strength, J/cm ² | Running surface hardness, HB |
|----------------|--------------------|--|---------------|------------------------------------|------------------------------|
| | | at least | | | |
| NT260 | GOST R 51045-2014 | 850 | 6 | — | — |
| DT350 OT350 | | 1,080 | 6 | 15 | 311 to 401 |

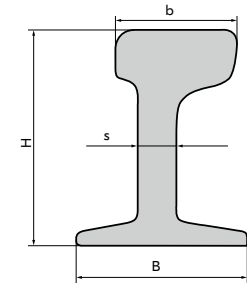
Product length

12.5 m and 25 m, with or without bolt holes.

Check/wing rails

The rails are manufactured at the rail plant of EVRAZ ZSMK.

Intended for fabrication of railway junctions and crossings/frogs. The rails conform to TS 05757676-44-2017 in the mix, chemical and mechanical properties.



Main rail dimensions

| Rail type | H, mm | B, mm | b, mm | S, mm |
|-----------|-------|-------|-------|-------|
| UR65 | 180 | 150 | 97.5 | 30 |

Steel chemical composition

| Steel grade | Element mass fraction, % | | | | | | |
|-------------|--------------------------|--------------|--------------|--------------|-------|-------|-------|
| | C | Mn | Si | V | P | S | Al |
| E76F | 0.71 to 0.82 | 0.75 to 1.25 | 0.25 to 0.60 | 0.03 to 0.15 | 0.020 | 0.020 | 0.004 |

Mechanical properties

| Rail type | Ultimate resistance, N/mm ² (kgf/mm ²) | Yield stress (yield point), N/mm ² (kgf/mm ²) | Elongation, % |
|-----------|---|--|---------------|
| | at least | | |
| UR65 | 900 | 500 | 5 |

Product length

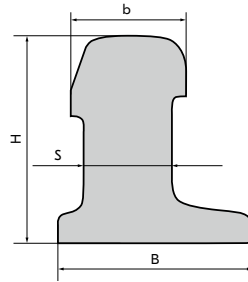
10.05 m, in multiple lengths by agreement with a customer, not to exceed 25 m, without bolt holes.

Switch point rails

The rails are manufactured at the rail plant of EVRAZ ZSMK.

Switch point rails types OR50 and OR65 are used in the general interchange and non-public wide gage track structures.

In terms of product mix, chemistry and mechanical properties switch point rails types OR65 and OR50 comply with GOST R 55820-2013.



Main rail dimensions

| Rail type | Reference document | H, mm | B, mm | b, mm | S, mm |
|-----------|--------------------|-------|-------|-------|-------|
| OR50 | GOST R 55820-2013 | 112 | 132 | 74 | 58 |
| OR65 | | 140 | 132 | 77.5 | 58 |

Steel chemical composition

| Steel grade | Element mass fraction, % | | | | | | | |
|-------------|--------------------------|--------------|--------------|--------------|--------------|-------|-------|-------|
| | C | Mn | Si | V | Cr | P | S | Al |
| E73F | 0.67 to 0.78 | 0.75 to 1.05 | 0.18 to 0.45 | 0.03 to 0.15 | — | 0.025 | 0.025 | 0.004 |
| E76HSF | 0.69 to 0.80 | 0.70 to 1.00 | 0.30 to 0.70 | | 0.35 to 0.80 | 0.020 | 0.020 | |

Mechanical properties

| Rail type | Steel grade | Ultimate resistance, σ_b , N/mm ² | Yield strength, $\sigma_{0.2}$, N/mm ² | Elongation, δ , % | Area reduction, ψ , % | Running surface hardness, HB |
|--------------|-------------|---|--|--------------------------|----------------------------|------------------------------|
| | | | | | | |
| OR50 OR65 | E73F | 900 | 500 | 5.0 | 10.0 | 260 to 321 |
| OR65 | E76HSF | 1,080 | 600 | 6.0 | 12.0 | 321 to 363 |

Product length

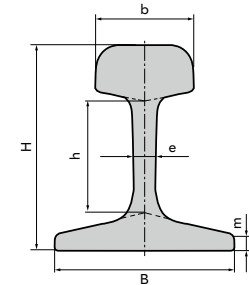
13,110 mm, 10,790 mm, 8,340 mm, 6,555 mm, not longer than 25 m.

Note:

Switch point rail type OR65 category NT320 is a new product.

Narrow gage railway rails

The rails are manufactured at the heavy section mill of EVRAZ NTMK.



Main rail dimensions

| Rail type | Reference document | 1 m weight, kg | Cross sectional dimensions, mm | | | | | |
|-----------|--------------------|----------------|--------------------------------|--------------|---------------|--------------------|------------------|-----------------|
| | | | rail depth, H | web depth, h | head width, b | base/foot width, B | web thickness, e | flange depth, m |
| R33 | TU 14-2R-383-2004 | 33.48 | 128 | 68 | 60 | 110 | 12 | 8.54 |

Narrow gage rail versions

| Rail type | Application | Steel grade, category | Product length, m |
|-----------|--|---|-------------------|
| R33 | Mining railway rails for mine conductors. Also used in company tracks, mine car tracks, crane runways. | VP ¹ , PP ² , NP ³ | 8, 10 |

Supply conditions

The rails are supplied without bolt holes.

Note:

1. High strength (carbon 0.60 to 0.82%);
2. Increased strength (carbon 0.50 to 0.59%);
3. Standard strength (carbon 0.40 to 0.49%).

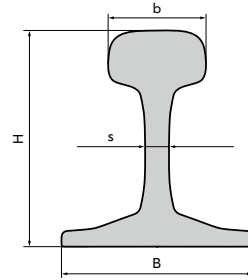
Railway rails as per EN 13674-1:2011+A1:2017

The rails are manufactured at the rail plant of EVRAZ ZSMK.

The rails are intended for use in jointed tracks and continuous welded tracks. Rails as per EN 13674-1:2011+A1:2017 are intended for export.

The rails are manufactured of the grades below:

- R260: raw rails of non-alloyed (C-Mn) steel, hardness (260 to 300) HB;
- R350NT: head hardened rails of non-alloyed (C-Mn) steel, hardness (350 to 390) HB.



Main rail dimensions

| Rail type | Reference document | H, mm | B, mm | b, mm | S, mm |
|-----------|-------------------------|-------|-------|-------|-------|
| 49E1 | EN 13674-1:2011+A1:2017 | 149 | 125 | 67 | 14 |
| 49E5 | | 149 | 125 | 67 | 14 |
| 50E6 | | 153 | 140 | 65 | 15.5 |
| 54E1 | | 159 | 125 | 67 | 16 |
| 54E4 | | 154 | 125 | 67 | 16 |
| 60E1 | | 172 | 150 | 72 | 16.5 |
| 60E2 | | 172 | 150 | 72 | 16.5 |

Steel chemical composition

| Steel grade | Reference document | Element mass fraction, % | | | | | | | |
|-------------|-------------------------|--------------------------|--------------|--------------|---------------------|--------|-------|-------|-------|
| | | C | Mn | Si | V | Cr | P | S | Al |
| R260 | EN 13674-1:2011+A1:2017 | 0.60 to 0.82 | 0.65 to 1.25 | 0.13 to 0.60 | not to exceed 0.030 | ≤ 0.15 | 0.030 | 0.030 | 0.004 |
| R350NT | | 0.70 to 0.82 | | | | | 0.025 | 0.030 | |

Mechanical properties

| Steel grade | Reference document | Tensile strength, N/mm ² | Elongation, % | Running surface hardness, HB |
|-------------|-------------------------|-------------------------------------|---------------|------------------------------|
| | | at least | | |
| R260 | EN 13674-1:2011+A1:2017 | 880 | 10 | 260 to 300 |
| R350NT | | 1,175 | 9 | 350 to 390 |

Product length

18, 25 m.

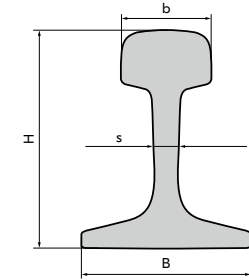
Railway rails as per AREMA

The rails are manufactured at the rail plant of EVRAZ ZSMK.

Intended for jointed tracks, continuous welded tracks and turnout switches. Manufactured as per AREMA 2020, intended for export.

The rails are manufactured of:

- steel of standard chemical composition;
- low alloy steel.



Main rail dimensions

| Rail type | Reference document | H, mm | B, mm | b, mm | S, mm |
|-----------|--------------------|--------|--------|-------|-------|
| 90RE | AREMA 2020 | 142.88 | 130.18 | 65.09 | 14.29 |
| 115RE | | 168.28 | 139.70 | 69.01 | 15.88 |
| 136RE | | 185.74 | 152.40 | 74.61 | 17.47 |

Steel chemical composition

| Steel grade | Reference document | Element mass fraction, % | | | | | | | |
|-------------|--------------------|--------------------------|--------------|--------------|--------------------|-------|-------|-------|-------|
| | | C | Mn | Si | Cr | V | P | S | Al |
| Standard | AREMA 2020 | 0.74 to 0.86 | 0.75 to 1.25 | 0.10 to 0.60 | not to exceed 0.30 | 0.010 | 0.020 | 0.020 | 0.010 |
| Low alloy | | 0.72 to 0.82 | 0.70 to 1.25 | 0.10 to 1.00 | 0.40 to 0.70 | | | | |

Mechanical properties

| Steel grade | Rail type | Reference document | Yield stress (yield point), N/mm ² | Tensile strength, N/mm ² | Elongation, % | Running surface hardness, HB |
|-------------|-------------------|--------------------|---|-------------------------------------|---------------|------------------------------|
| | | | at least | | | |
| Standard | Standard strength | AREMA 2020 | 510 | 983 | 10 | 310 |
| | Medium strength | | 105 | 155 | | 350 |
| | High Strength | | 827 | 1,179 | | 370 |
| Low alloy | Standard strength | | 510 | 983 | 8 | 310 |
| | Medium strength | | 552 | 1,014 | | 325 |
| | High Strength | | 827 | 1,179 | | 10 |

Product length

24, 25 m.

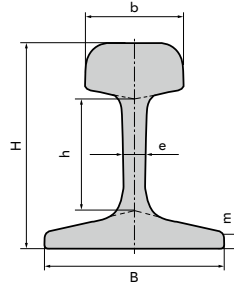
Railway rails as per KS R 9106:2006R

The rails are manufactured at the rail plant of EVRAZ ZSMK.

Intended for use in jointed tracks and continuous welded tracks. The rails as per KS R 9106:2006R are intended for export.

The rails are manufactured of the grades grades below:

- R260: raw rails of non-alloyed (C-Mn) steel, hardness (260 to 300) HB;
- R350NT: head hardened rails of non-alloyed (C-Mn) steel, hardness (350 to 390).



Main rail dimensions

| Rail type | Reference document | 1 m weight, kg | Cross sectional dimensions, mm | | | | | | Manufacturer |
|-----------|--------------------|----------------|--------------------------------|--------------|---------------|--------------------|------------------|----------------------|--------------|
| | | | rail depth, H | web depth, h | head width, b | base/foot width, B | web thickness, e | base blade height, m | |
| 50 kgN | KS R 9106:2006R | 50.4 | 153 | 74 | 65.07 | 127 | 15 | 12.15 | EVRAZ ZSMK |
| 60 kgKR | KS R 9106:2006R | 60.58 | 174 | 94.9 | 65 | 145 | 16.5 | 11.98 | |

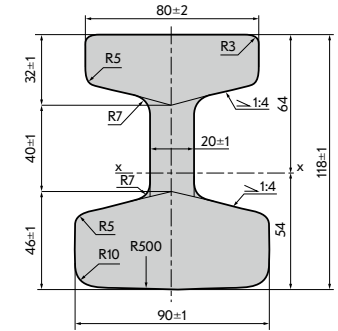
Product length

18, 25 m.

Conductor rails for underground railways

Conductor rails for supplying electric current to subway cars

The rails are manufactured at the rail and structural steel mill of EVRAZ NTMK.



Dimensions shown free of tolerance are given for roll gap engineering, ensured by the process tools and not checked in finished rails

Main rail dimensions

| Reference document | Cross section area, cm ² | 1 m weight, kg | Steel grade | Supply conditions |
|--|-------------------------------------|----------------|-------------|--|
| TU 25112-043-00186269-2019 TU 25112-040-00186269-2018 | 65.84 | 51.69 | 08U | Rail length 12.5 m, tolerance; Length tolerance: not to exceed ±30 mm |

Steel chemical composition

| Steel grade | Element mass fraction, % | | | | | | | | | |
|-------------|--------------------------|--------------|---------------|------|------|-----|-----|-----|-------|--------------|
| | C | Mn | not to exceed | | | | | | | Al |
| | | | Si | S | P | Cr | Ni | Cu | N | |
| 08U | 0.05 to 0.12 | 0.25 to 0.50 | 0.03 | 0.03 | 0.03 | 0.1 | 0.3 | 0.3 | 0.008 | 0.02 to 0.08 |

Note:

Specific electrical resistance of steel (at plus 15°C): not to exceed 0,125 μOhm·m (Ohm·mm²/m).

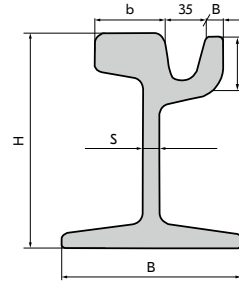
Tram rails

Grooved tram rails

The rails are manufactured at the rail plant of EVRAZ ZSMK.

Intended for urban electric railways in tangent and curved tracks.

In terms of product mix, chemistry and mechanical properties the rails comply with GOST R 55941-2014, TU-2R-320-96.



Main rail dimensions

| Rail type | B, mm | b, mm | H, mm | c, mm | a, mm | S, mm | 1 m weight, kg |
|-----------|-------|-------|-------|-------|-------|-------|----------------|
| RT62 | 150 | 58 | 180 | 40.8 | 23 | 12 | 62.10 |

Steel chemical composition

| Steel grade | Element mass fraction, % | | | | | |
|-------------|--------------------------|--------------|--------------|------|-------|-------|
| | C | Mn | Si | Cr | P | S |
| E76 | 0.71 to 0.82 | 0.74 to 1.05 | 0.18 to 0.40 | 0.30 | 0.025 | 0.025 |

not to exceed

Mechanical properties

| Rail type | Ultimate resistance, σ_b , N/mm ² | Elongation, δ , % | Running surface hardness, HB |
|-----------|---|--------------------------|------------------------------|
| | at least | | |
| RT62 | 820 | 6.0 | 260 |

Supplied lengths, product length

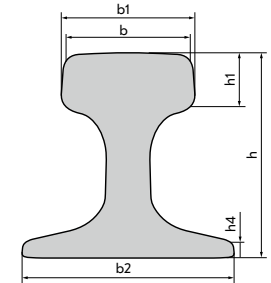
The rails are made with/without two bolt holes, 12.5 m long, length tolerance ± 10 mm.

The rail macrostructure is guaranteed by the manufacturer. The rail manufacturing process ensures that they are free from flakes.

Crane rails

The rails are manufactured at EVRAZ ZSMK and EVRAZ NTMK.

Intended for the lifting crane tracks.



Main rail dimensions

| Rail type | Reference document | Steel grade | H, mm | b ₂ , mm | b, mm | 1 m weight, kg | Manufacturer |
|-----------|--|-------------------------------|-------|---------------------|-------|----------------|--------------|
| KR70 | GOST R 53866-2010 | K76F as per GOST R 51685-2013 | 120 | 120 | 70 | 47.47 | EVRAZ NTMK |
| KR80 | | | 130 | 130 | 80 | 64.24 | |
| KR100 | | | 150 | 150 | 100 | 89.05 | |
| KR120 | | | 170 | 170 | 120 | 118.29 | |
| KR140 | | | 170 | 170 | 140 | 146.98 | |
| KR80 | GOST R 53866-2010 TU 14-2R-393-2005 | 63 as per GOST R 53866-2010 | 130 | 130 | 80 | 64.24 | EVRAZ ZSMK |
| KR120 | | | 170 | 170 | 120 | 118.29 | |

Steel chemical composition

| Steel grade | Element mass fraction, % | | | | | | | |
|-------------|--------------------------|--------------|--------------|--------------|--------------|-------|-------|-------|
| | C | Mn | Si | S | P | Cr | Ni | Cu |
| 63 | 0.53 to 0.73 | 0.60 to 1.00 | 0.15 to 0.35 | 0.035 | 0.040 | 0.30 | 0.30 | 0.30 |
| K76F | GOST R 51685-2013 | 0.71 to 0.82 | 0.75 to 1.25 | 0.25 to 0.60 | 0.03 to 0.15 | 0.020 | 0.020 | 0.004 |

not to exceed

Supplied lengths, product length

Product lengths offered from EVRAZ ZSMK, m:

fixed: 9.0; 9.5; 10.0; 10.5; 11.0; 11.5; 12.0;
non-fixed: 4.0 to 12.0.

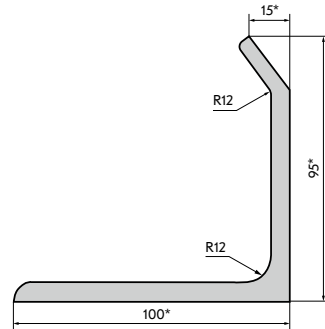
Product lengths offered from EVRAZ NTMK, m:

fixed lengths; 11.0; 12.0.

Rails may be shipped both loose or in tight bundles-cross strapped or wired. The rails are supplied as per the standard rolling accuracy requirement.

Railcar building sections

The products are manufactured at EVRAZ NTMK (channel type 20V-2, Z-beam section – at the rail and structural steel mill, I-beams for car building – at the H-beam plant, the railcar post – at the heavy section plant, and at EVRAZ ZSMK (top cord section, I-beam type 15V1, channel type 8V – at the medium section mill 450, channel types 30V, 30V-2 for railcar building – at the rail and structural steel mill.

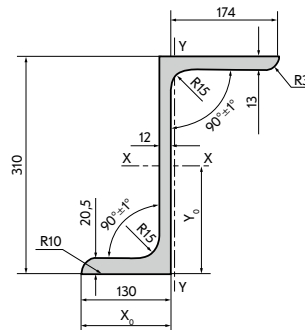


Top cord section new products

Material and shape specification

| Section reference document | Cross sectional area, cm ² | 1 m weight, kg | Steel code | | Chemistry reference document | Techspecs reference document | Supplied lengths, product length, m |
|----------------------------|---------------------------------------|----------------|------------|-----------------|------------------------------|------------------------------|-------------------------------------|
| | | | class | grade | | | |
| GOST 5267.4-90 | 13.601 | 10.68 | 325 | 09G2S 09G2SD | GOST 19281-2014 | GOST 5267.0-90 | up to 12.7 |
| | | | 345 | | | | |
| | | | 375 | | | | |

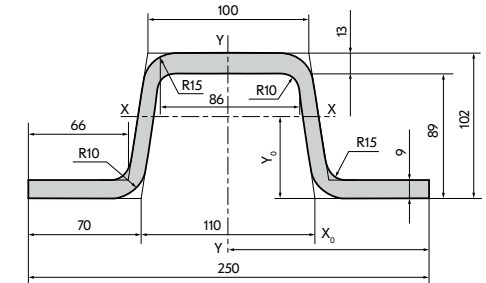
Z-beam section



Material and shape specification

| Section reference document | Cross sectional area, cm ² | 1 m weight, kg | Steel code | | Chemistry reference document | Techspecs reference document | Supplied lengths, product length, m |
|----------------------------|---------------------------------------|----------------|------------|------------------------------------|------------------------------|-----------------------------------|--|
| | | | class | grade | | | |
| GOST 5267.3-90 | 84.74 | 66.52 | 345 | 09G2S 09G2SD 09G2D 15HSND | GOST 19281-2014 | GOST 19281-2014 GOST 5267.0-90 | Fixed lengths: 10.8 to 15.8; non-fixed lengths |
| | | | 390 | | | | |
| | | | 375 | | | | |

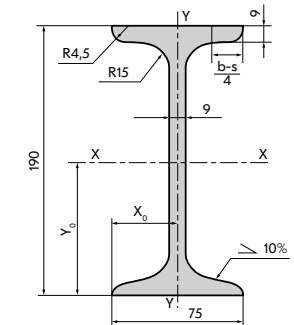
Railcar post



Material and shape specification

| Section reference document | Cross sectional area, cm ² | 1 m weight, kg | Steel code | | Chemistry reference document | Techspecs reference document | Supplied lengths, product length, m |
|----------------------------|---------------------------------------|----------------|------------|------------------------------------|------------------------------|-----------------------------------|--|
| | | | class | grade | | | |
| GOST 5267.6-90 | 36.57 | 28.71 | 345 | 09G2S 09G2SD 09G2D 15HSND | GOST 19281-2014 | GOST 19281-2014 GOST 5267.0-90 | Fixed lengths: 4.2 to 13.0; multiple of fixed length; non-fixed lengths |
| | | | 390 | | | | |
| | | | 375 | | | | |

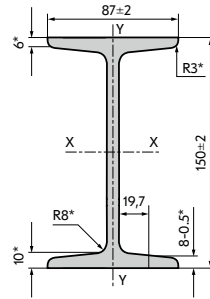
I-beam №19



Material and shape specification

| Section reference document | Cross sectional area, cm ² | 1 m weight, kg | Steel code | | Chemistry reference document | Techspecs reference document | Supplied lengths, product length, m |
|----------------------------|---------------------------------------|----------------|------------|------------------------------------|------------------------------|-----------------------------------|--|
| | | | class | grade | | | |
| GOST 5267.5-90 | 30.37 | 23.84 | 325 | 09G2S 09G2SD 09G2D 15HSND | GOST 19281-2014 | GOST 19281-2014 GOST 5267.0-90 | Fixed length: 4.2 to 12.74; fixed length multiples; non-fixed lengths |
| | | | 345 | | | | |
| | | | 390 | | | | |

Center sill section



Section mix

| Section | Profile dimensions, mm | | | | | | | Cross sectional area F, cm ² |
|---------|------------------------|----|---|---|----------------|----------------|---|--|
| | h | b | s | t | h _w | b _w | R | |
| 15V1 | 150 | 87 | 8 | 6 | 138 | 39.5 | 8 | 25.77 |

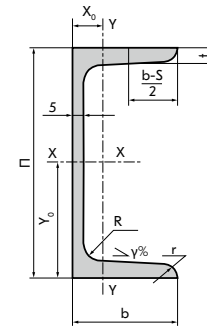
Material and shape specification

| Section reference document | 1 m weight, kg | Steel code | | Chemistry reference document | Techspecs reference document | Supplied lengths, product length, m |
|----------------------------|----------------|------------|------------------------------------|------------------------------|------------------------------|-------------------------------------|
| | | class | grade | | | |
| TS 5757676-45-2019 | 19.6 | 345 | 09G2S 09G2SD 12G2S 12G2SD | GOST 19281-2014 | GOST 19281-2014 | Fixed length: 12.7 ¹ |

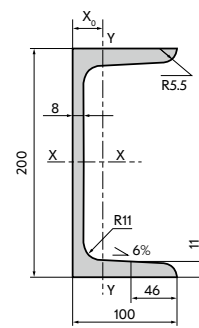
Note:

1. Other specified fixed lengths may be shipped upon approval by the customer.

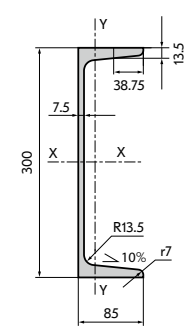
Channels



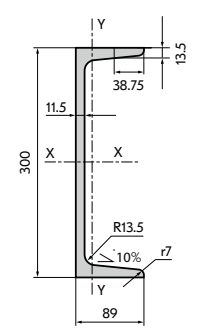
Channel/C-beam type 8V



Channel/C-beam type 20V-2



Channel/C-beam type 30V



Channel/C-beam type 30V-2

Material and shape specification

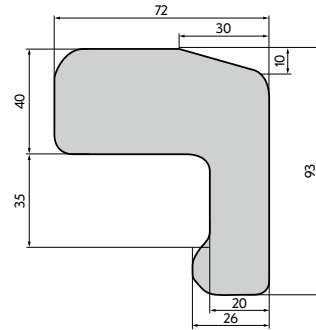
| Product name | Section reference document | Cross sectional area, cm ² | 1 m weight, kg | Steel code | | Techspecs reference document | Supplied lengths, product length, m |
|---------------------------|--------------------------------|---------------------------------------|----------------|----------------------|------------------------------------|----------------------------------|---|
| | | | | class | grade | | |
| Channel/C-beam type 8V | GOST 52671-90 | 11.8 | 9.2 | 345 | S1ps/sp 09G2S | GOST 380-2005 GOST 19281-2014 | Fixed length: 6 to 12 |
| Channel/C-beam type 20V-2 | | | | 345 | 09G2S 09G2SD 09G2D 15HSND | GOST 19281-2014 | Fixed lengths: 6 to 12, non-fixed lengths |
| | | | | 390 | 10HSND 12G2F 12G2FD | TU 14-1-5391-99 | |
| Channel/C-beam type 30V | GOST 52671-90 GOST 52670-90 | 43.88 | 34.44 | 345 (category 14) | 3sp 09G2S | GOST 19281-2014 | 12 |
| Channel/C-beam type 30V-2 | | | | | | | |

Track superstructure sections

Counter-rail angle type SP850

The product is manufactured at the heavy section plant of EVRAZ NTMK.

The angles are used in R65 rail-based track superstructures.

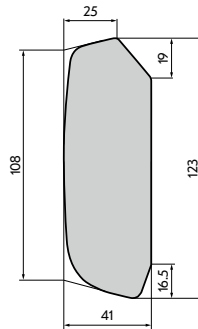


Material and shape specification

| Section reference document | 1 m weight, kg | Steel grade | Chemistry reference document | Supplied lengths, product length, m |
|----------------------------|----------------|-------------|------------------------------|-------------------------------------|
| TU 0921-245-01124323-2007 | 30.1 | K68 | TU 0921-245-01124323-2007 | Fixed length multiples: 6 to 10 |

Fishplate/Joint plate strip type "ApATeCh R65 MK-BO"

The product is manufactured at the heavy section plant of EVRAZ NTMK. The product is used to manufacture of full section combination (metal-composite) fishplate type "ApATeCh R65 MK-BO" which is used in high strength bonded-bolted block joints of R65 rails.



Material and shape specification

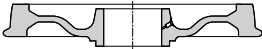

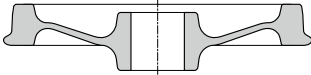
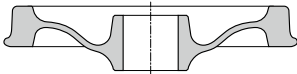
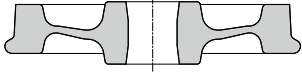
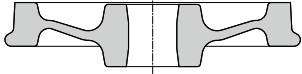
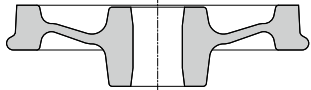

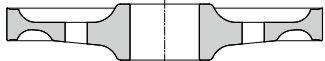
| Section reference document | 1 m weight, kg | Steel grade | Chemistry reference document | Supplied lengths, product length, m |
|----------------------------|----------------|-------------|------------------------------|-------------------------------------|
| TS 00186269-309-2018 | 34.58 | 30HGSA | GOST 4543-2016 | Fixed lengths: 6 to 12 |


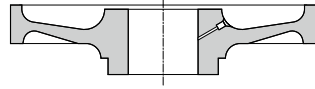

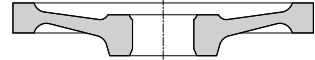
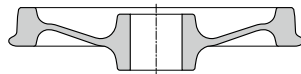
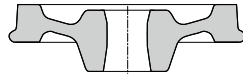
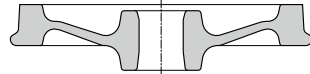
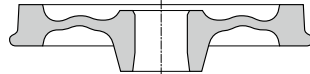
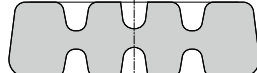
Railway wheels, wheel blacks, wheel centers

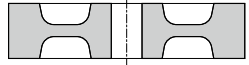
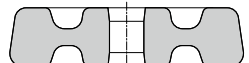
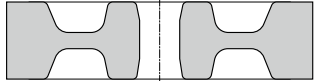
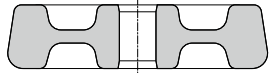
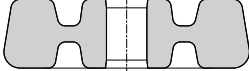
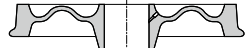



The products are manufactured at the wheel and tire plant of EVRAZ NTMK.








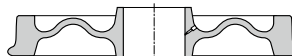
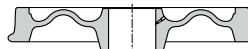

Material and shape specification



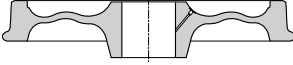
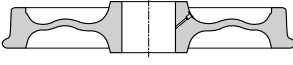
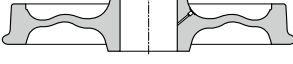



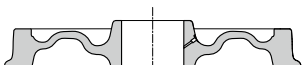
| Product name | Application | Section reference document | Taping line/tread diameter, mm | Steel grade | Techspecs reference document |
|---|---------------------------|--|--------------------------------|-------------|------------------------------|
| Finished and black wheels as per GOST 10791 | | | | | |
| Solid wheel with pan-shaped plate/web | For freight cars | Figure A. 1 GOST 10791-2011 Drawing 00186269-162 Drawing 00186269-163 | 957 | 2, T | GOST 10791-2011 |
| | | | | | |
| Solid wheel Solid wheel with pan-shaped plate for maintenance purposes | For freight cars | Drawing 00186269-164 | 945 | 2 | GOST 10791-2011 |
| | | | | | |
| Solid wheel with S-shaped plate | For freight cars | Figure A. 3 GOST 10791-2011 Drawing 00186269-013A | 957 | T | GOST 10791-2011 |
| | | | | | |
| Solid wheel | For special rolling stock | Drawing 010 | 710 | 2 | GOST 10791-2011 |
| | | | | | |
| Solid wheel | For special rolling stock | Drawing 012 | 1,050 | 2 | GOST 10791-2011 |
| | | | | | |
| Solid wheel | For switcher locomotives | Drawing 011 | 1,058 | 2 | GOST 10791-2011 |
| | | | | | |


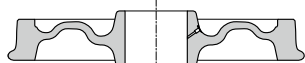
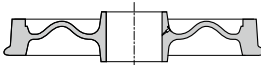




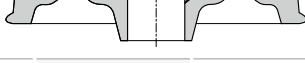

| Product name | Application | Section reference document | Taping line/tread diameter, mm | Steel grade | Techspecs reference document |
|------------------------------|---------------------------------|---|--------------------------------|-------------|--|
| Solid wheel | For locomotives | Drawing 8TS. 224. 042 | 1,050 | T | GOST 10791-2011 |
| | |  | | | |
| Solid wheel | For electric trains | Drawing 00186269-152 Drawing 00186269-153 | 920 | 2 | GOST 10791-2011 |
| | |  | | | |
| Solid wheel | For freight cars | Drawing 00186269-008 | 957 | 2 | GOST 10791-2011 |
| | |  | | | |
| Solid wheel | For freight cars | Drawing 00186269-037 | 957 | 2 | GOST 10791-2011 |
| | |  | | | |
| Black wheel (unmachined) | For underground railway systems | Drawing 073V-1 | 803 | 2 | GOST 10791-2011 TU 0943-286-01124323-2012 |
| | |  | | | |
| Black wheel (unmachined) | For underground railway systems | Drawing 124-1 | 875 | 2 | GOST 10791-2011 TU 0943-286-01124323-2012 |
| | |  | | | |
| Black wheel (unmachined) | For underground railway systems | Drawing 125-1 | 875 | 2 | GOST 10791-2011 TU 0943-286-01124323-2012 |
| | |  | | | |
| Wheel centers, blanks | | | | | |
| Wheel centers | For electric locomotives | Drawing NTMK EP2K. 31.15.102 | 1,070.6 | M | GOST R 55498-2013 |
| | |  | | | |
| Wheel centers | For electric locomotives | Drawing NTMK/ EP2K. 31.15.103 | 1,070.6 | M | GOST R 55498-2013 |
| | |  | | | |

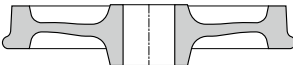



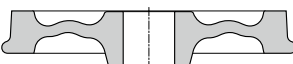
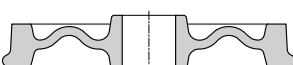
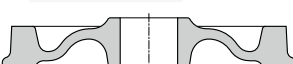
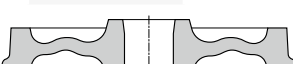
| Product name | Application | Section reference document | Taping line/tread diameter, mm | Steel grade | Techspecs reference document |
|---|-------------------------|---|--------------------------------|-------------|---|
| Wheel centers | For electric locomotive | Drawing 2E56.31.110.007 | 1,073 | M | GOST R 55498-2013 |
| | |  | | | |
| Wheel centers | For diesel locomotive | Drawing 00186269-156 | 906 | M | GOST R 55498-2013 |
| | |  | | | |
| Gear wheel blank | For locomotives | Drawing 077A-2 | 1,005 | 55F | TU 14-2R-343-2000 |
| | |  | | | |
| Gear wheel blank | For locomotives | Drawing 128 | 990 | 45HN 55F | Technical agreement |
| | |  | | | |
| Solid wheel for maintenance purposes | For in-house use | Drawing 082A-2 | 940 | 2, T | STO 14-2R-458-2010 |
| | |  | | | |
| Black wheel (unmachined) | For ingot cars | Drawing 00186269-097-1B | 863 | 2 | Technical agreement |
| | |  | | | |
| Solid work pieces for wheels with panshaped plate/web | For freight cars | Drawing 00186269-147 | 964 | 2, T | TU 24108-022-00186269-2017 |
| | |  | | | |
| Solid work pieces for wheels with S-shaped plate | For freight cars | Drawing 00186269-149 | 968 | T | TU 24108-022-00186269-2017 GOST 10791-2011 |
| | |  | | | |
| Crane wheel blank | For cranes | Drawing 00186269-180 | 1010 | 2 | Technical agreement |
| | |  | | | |




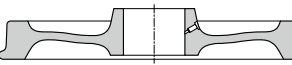
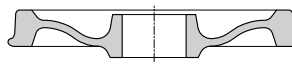
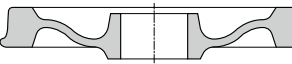

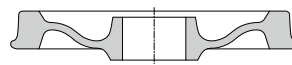
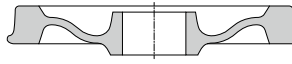
| Product name | Application | Section reference document | Taping line/tread diameter, mm | Steel grade | Techspecs reference document |
|--|------------------|---|--------------------------------|-------------|------------------------------|
| Crane wheel blank | For cranes | Drawing 00186269-181 | 695 | 2 | Technical agreement |
| | |  | | | |
| Crane wheel blank | For cranes | Drawing 00186269-182 | 831 | 2 | Technical agreement |
| | |  | | | |
| Crane wheel blank | For cranes | Drawing 00186269-184 | 910 | 2 | Technical agreement |
| | |  | | | |
| Crane wheel blank | For cranes | Drawing 00186269-185 | 836 | 2 | Technical agreement |
| | |  | | | |
| Crane wheel blank | For cranes | Drawing 00186269-186 | 695 | 2 | Technical agreement |
| | |  | | | |
| Finished and black wheels as per EN 13262 | | | | | |
| Solid wheel with S-shaped plate | For freight cars | Drawing 00186269-002 BA005 | 920 | ER7 | EN 13262:2004+A2:2011 |
| | |  | | | |
| Solid wheel with S-shaped plate | For freight cars | Drawing 00186269-004 BA409 | 920 | ER7 | EN 13262:2004+A2:2011 |
| | |  | | | |
| Solid wheel with S-shaped plate | For freight cars | Drawing 00186269-006 BA314 | 920 | ER7 | EN 13262:2004+A2:2011 |
| | |  | | | |
| Solid wheel with S-shaped plate | For freight cars | Drawing 00186269-009 EV001 | 920 | ER7 | EN 13262:2004+A2:2011 |
| | |  | | | |

| Product name | Application | Section reference document | Taping line/tread diameter, mm | Steel grade | Techspecs reference document |
|---------------------------------|--------------------------|---|--------------------------------|-------------|---|
| Solid wheel with S-shaped plate | For freight cars | Drawing 00186269-014 BA409 | 920 | ER7 | EN 13262:2004+A2:2011 |
| | |  | | | |
| Solid wheel with S-shaped plate | For freight cars | Drawing 00186269-018 EV001 | 920 | ER7 | EN 13262:2004+A2:2011 |
| | |  | | | |
| Solid wheel with S-shaped plate | For freight cars | Drawing 00186269-023 BA428 | 920 | ER7 | EN 13262:2004+A2:2011 |
| | |  | | | |
| Solid wheel with S-shaped plate | For freight cars | Drawing 00186269-024 BA428 | 920 | ER7 | EN 13262:2004+A2:2011 |
| | |  | | | |
| Solid wheel with S-shaped plate | For freight cars | Drawing 00186269-025 BA428 | 920 | ER7 | EN 13262:2004+A2:2011 |
| | |  | | | |
| Solid wheel with S-shaped plate | For freight cars | Drawing 00186269-026 BA428 | 920 | ER7 | EN 13262:2004+A2:2011 |
| | |  | | | |
| Solid wheel with S-shaped plate | For passenger coach cars | Drawing 00186269-038 BA220 | 920 | ER7 | BN 918277:2008 EN 13262:2004+A2:2011 |
| | |  | | | |
| Solid wheel with S-shaped plate | For freight cars | Drawing 00186269-039 BA303 | 920 | ER7 | EN 13262:2004+A2:2011 |
| | |  | | | |
| Solid wheel with S-shaped plate | For freight cars | Drawing 00186269-053 BA005 | 920 | ER7 | EN 13262:2004+A2:2011 |
| | |  | | | |
| Solid wheel with S-shaped plate | For freight cars | Drawing 00186269-058 BA314 | 920 | ER7 | EN 13262:2004+A2:2011 |
| | |  | | | |

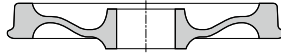
| Product name | Application | Section reference document | Taping line/tread diameter, mm | Steel grade | Techspecs reference document |
|---|------------------|--|--------------------------------|-------------|---|
| Solid wheel with S-shaped plate | For freight cars | Drawing 00186269-059 BA303 | 920 | ER7 | EN 13262:2004+A2:2011 |
|  | | | | | |
| Solid wheel with S-shaped plate | For freight cars | Drawing 00186269-060 BA004 | 920 | ER7 | EN 13262:2004+A2:2011 |
|  | | | | | |
| Solid wheel with S-shaped plate | For freight cars | Drawing 00186269-062 BA409 | 920 | ER7 | EN 13262:2004+A2:2011 |
|  | | | | | |
| Solid wheel with S-shaped plate | For freight cars | Drawing 00186269-083 | 920 | ER7 | EN 13262:2004+A2:2011 |
|  | | | | | |
| Solid wheel with S-shaped plate | For freight cars | Drawing 00186269-084 BA428 | 920 | ER7 | EN 13262:2004+A2:2011 |
|  | | | | | |
| Solid wheel with S-shaped plate | For freight cars | Drawing 00186269-093 EV003 | 760 | ER7 | BN 918277:2008 EN 13262:2004+A2:2011 |
|  | | | | | |
| Solid wheel with S-shaped plate | For freight cars | Drawing 00186269-094 | 840 | ER7 | BN 918277:2008 EN 13262:2004+A2:2011 |
|  | | | | | |
| Solid wheel with S-shaped plate | For freight cars | Drawing 131 BA002 | 920 | ER7 | EN 13262:2004+A2:2011 |
|  | | | | | |
| Solid wheel with S-shaped plate | For freight cars | Drawing 00186269-141 BA319 Supplied to DB only | 920 | ER7 | BN 918277:2008 EN 13262:2004+A2:2011 |
|  | | | | | |

| Product name | Application | Section reference document | Taping line/tread diameter, mm | Steel grade | Techspecs reference document |
|---|------------------|--|--------------------------------|-------------|--|
| Solid wheel | For ingot cars | Drawing 00186269-158 | 920 | ER9 | EN 13262:2004+A2:2011 |
|  | | | | | |
| Solid wheel with S-shaped plate | For freight cars | Drawing 00186269-159 BA318 Supplied to DB only | 920 | ER7 | BN 918277:2008 EN 13262:2004+A2:2011 |
|  | | | | | |
| Solid wheel with S-shaped plate | For freight cars | Drawing 00186269-161 BA004 | 920 | ER7 | EN 13262:2004+A2:2011 |
|  | | | | | |
| Solid wheel with S-shaped plate | For freight cars | Drawing 00186269-187 BA002 | 920 | ER7 | TU 0943-031-00186269-2015 EN 13262:2004+A2:2011 |
|  | | | | | |
| Solid wheel with S-shaped plate | For freight cars | Drawing 00186269-190 BA409 | 920 | ER7 | EN 13262:2004+A2:2011 |
|  | | | | | |
| Solid wheel with S-shaped plate | For freight cars | Drawing 00186269-191 BA314 | 920 | ER7 | EN 13262:2004+A2:2011 |
|  | | | | | |
| Solid wheel with S-shaped plate | For freight cars | Drawing 00186269-194 BA004 | 920 | ER7 | EN 13262:2004+A2:2011 |
|  | | | | | |
| Solid wheel with S-shaped plate | For freight cars | Drawing 00186269-200 BA005 | 920 | ER7 | EN 13262:2004+A2:2011 |
|  | | | | | |
| Solid work pieces for wheels with S-shaped plate | For freight cars | Drawing 00186269-034 BA004 | 934 | ER7 | EN 13262:2004+A2:2011 |
|  | | | | | |

| Product name | Application | Section reference document | Taping line/tread diameter, mm | Steel grade | Techspecs reference document |
|--|------------------|---|--------------------------------|-------------|--|
| Solid work pieces for wheels with S-shaped plate | For freight cars | Drawing 00186269-068 BA092 | 934 | ER7 | TU 0943-019-00186269-2015 EN 13262:2004+A2:2011 |
| | |  | | | |
| Solid work pieces for wheels with S-shaped plate | For freight cars | Drawing 00186269-072 | 776 | ER7 | TU 0943-019-00186269-2015 EN 13262:2004+A2:2011 |
| | |  | | | |
| Solid work pieces for wheels with S-shaped plate | For freight cars | Drawing 00186269-081 | 855 | ER7 | TU 0943-019-00186269-2015 EN 13262:2004+A2:2011 |
| | |  | | | |
| Solid work pieces for wheels with S-shaped plate | For freight cars | Drawing 00186269-088 BA303 | 935 | ER7 | TU 0943-019-00186269-2015 EN 13262:2004+A2:2011 |
| | |  | | | |
| Solid work pieces for wheels with S-shaped plate | For freight cars | Drawing 00186269-166 BA409 | 935 | ER7 | TU 0943-019-00186269-2015 EN 13262:2004+A2:2011 |
| | |  | | | |
| Solid work pieces for wheels with S-shaped plate | For freight cars | Drawing 00186269-167 BA004 | 934 | ER7 | TU 0943-019-00186269-2015 EN 13262:2004+A2:2011 |
| | |  | | | |
| Solid work pieces for wheels with S-shaped plate | For freight cars | Drawing 00186269-176 BA314 | 935 | ER7 | TU 0943-019-00186269-2015 EN 13262:2004+A2:2011 |
| | |  | | | |
| Solid work pieces for wheels with S-shaped plate | For freight cars | Drawing 00186269-183 | 939 | ER7 | EN 13262:2004+A2:2011 |
| | |  | | | |

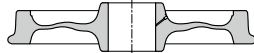
| Product name | Application | Section reference document | Taping line/tread diameter, mm | Steel grade | Techspecs reference document |
|--------------------------------------|------------------|---|--------------------------------|-------------|---|
| Wheels as per AAR M-107/M-208 | | | | | |
| Solid wheel with S-shaped plate | For freight cars | Drawing 00186269-015 J-33 | 838.2 | Class C | TU 0943-024-00186269-2016 AAR M-107/M-208:2020 |
| | |  | | | |
| Solid wheel with S-shaped plate | For freight cars | Drawing 00186269-139 H-36 | 914.4 | Class C | TU 0943-024-00186269-2016 AAR M-107/M-208:2020 |
| | |  | | | |
| Solid wheel with S-shaped plate | For freight cars | Drawing 00186269-091 B-38 | 965.2 | Class C | TU 0943-024-00186269-2016 AAR M-107/M-208:2020 |
| | |  | | | |
| Solid wheel with S-shaped plate | For locomotives | Drawing 00186269-043 | 1,041.4 | Class B | AAR M-107/M-208:2020 |
| | |  | | | |
| Solid wheel with S-shaped plate | For locomotives | Drawing 00186269-044 D-42 | 1,066.8 | Class C | AAR M-107/M-208:2020 |
| | |  | | | |
| Solid wheel with S-shaped plate | For locomotives | Drawing 00186269-047 E-42 | 1,066.8 | Class B | AAR M-107/M-208:2020 |
| | |  | | | |
| Solid wheel with S-shaped plate | For locomotives | Drawing 00186269-052 D-42 | 1,066.8 | Class B | AAR M-107/M-208:2020 |
| | |  | | | |
| Solid wheel with S-shaped plate | For locomotives | Drawing 00186269-090 A-41 | 1,041.4 | Class C | AAR M-107/M-208:2020 |
| | |  | | | |
| Solid wheel with S-shaped plate | For locomotives | Drawing 00186269-092 E-42 | 1,066.8 | Class C | AAR M-107/M-208:2020 |
| | |  | | | |

| Product name | Application | Section reference document | Taping line/tread diameter, mm | Steel grade | Techspecs reference document |
|----------------------------------|-----------------|----------------------------|--------------------------------|-------------|------------------------------|
| Solid wheels with S-shaped plate | For locomotives | Drawing 00186269-192 A-43 | 1,092.2 | Class B | AAR M-107/M-208:2020 |



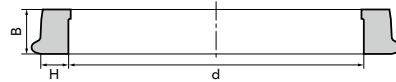
Wheels as per other standards

| | | | | | |
|---------------------------------|--------------------------|----------------------|-----|-----|-------------|
| Solid wheel with S-shaped plate | For passenger coach cars | Drawing 00186269-021 | 918 | IRS | IRS R-19/93 |
|---------------------------------|--------------------------|----------------------|-----|-----|-------------|



Rings/Tires

The products are manufactured at the wheel and tire plant of EVRAZ NTMK.

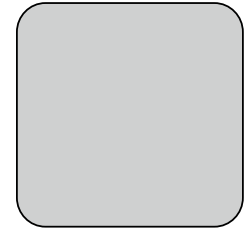


Material and shape specification

| Product name | Application | Section reference document | Techspecs reference document | Steel grade | Main dimensions, mm |
|-------------------|--|--------------------------------|------------------------------|-------------|--|
| Black tires/rings | For wide gage railway locomotives (flanged) | GOST R 52366-2005 Drawing 001A | GOST 398-2010 | 2 | 1,690×143×83 1,340×143×83 1,240×143×83 |
| | | GOST R 52366-2005 Drawing 003 | GOST 398-2010 | 4 | 1,160×143×83 1,160×143×98 1,090×143×83 1,060×143×83 |
| Black tires/rings | For wagons For wide-gage railway cars and fenders (flanged) | GOST 5000-83 Drawing 005 | GOST 398-2010 | 2 | 890×134×83 870×134×83 840×134×83 810×134×83 790×134×83 |
| Black tires/rings | For diesel locomotives | GOST R 52366-2005 Drawing 001A | GOST 398-2010 | 2 | 890×143×98 |
| Black tires/rings | For narrow gage tracks | Drawing 00186269-033 | UIC 810-1-2003 | B3 | 603×119×64 |

Axle blanks

The products are manufactured at the rail and structural steel mill of EVRAZ NTMK.



a

Material and shape specification

| Section name | Section reference document | 1 m weight, kg |
|--------------|----------------------------|----------------|
| 200×200 | GOST 4728-2010 | 304 |
| 215×215 | | 353 |
| 220×220 | | 370 |
| 230×230 | | 406 |

Grade mix

| Steel grade | Reference document |
|-------------|--------------------|
| OC | GOST 4728-2010 |
| EAIN | DIN EN 13261 |

Construction products

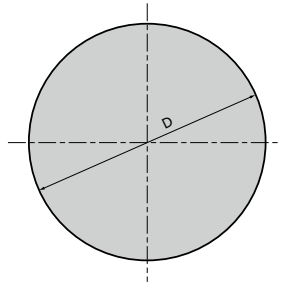
- EVRAZ products of high-strength S390 steel are used in unique projects.
- EVRAZ is implementing a prefabricated building project.

Developing steel
construction



Hot-rolled round steel bars

The products are manufactured at the structural steel plant of EVRAZ ZSMK.



Material and shape specification

| Diameter, mm | Chemistry reference document | Techspecs reference document | Supplied lengths, product length, m |
|---|--|--|---|
| 6; 6.5; 8; 9; 10; 12 (wire rod) | GOST 1050-2013 | GOST 2590-2006 GOST 1050-2013 (3 GP) | Coils up to 830 kg |
| | GOST 10702-2016 | GOST 2590-2006 GOST 10702-2016 (50, 66) | |
| | GOST 380-2005 | GOST 30136-95 (UO1 ¹ , VO ²) | |
| | GOST 380-2005 | TU 14-1-5282-94 (UO1, VO) | |
| | GOST 380-2005 | TU 14-1-5282-94 (UO1, VO) | |
| | TU 14-1-5317-95 | TU 14-1-5317-95 (KK ³) | |
| | GOST 2246-70 TU 14-1-4760-2018 | TU 14-1-4760-2018 | |
| | GOST 2246-70 TU 14-1-4782-2018 | TU 14-1-4782-2018 | |
| 10, 12, 14, 16, 18, 19, 20, 21, 22, 23, 24, 25, 28, 30, 32, 33, 34, 36, 38, 40, 42, 45, 46, 48, 50, 52, 54, 56, 60, 65 (long products) | GOST 1050-2013 GOST 10702-2016 GOST 19281-2014 GOST 4543-2016 | GOST 2590-2006 GOST 1050-2013 GOST 10702-2016 GOST 19281-2014 GOST 4543-2016 | Fixed lengths, fixed length multiples, non-fixed length 6 to 12 |
| | GOST 380-2005 | GOST 2590-2006 GOST 535-2005 | |

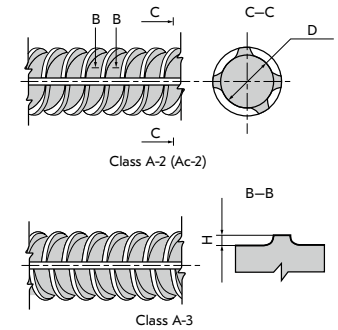
Note:

1. UO1 — cooling method (single-step accelerated cooling);
2. VO — natural air cooling correspondingly;
3. KK — quality wire rope.

Hot-rolled rebars for reinforced concrete structures

The products are manufactured at the structural steel plant of EVRAZ ZSMK.

The products are intended for reinforcement of normal and pre-stressed concrete structures.



Material and section specification

| Diameter, mm | Class | Chemistry reference document ¹ | Techspecs reference document | Supplied lengths, product length, m |
|--|------------------------|--|---------------------------------|---|
| 3 (10) — 6 (19) ² | Gr 40 | ASTM A615/A615M GOST 380-2005 (S15ps) | ASTM A615/A615M | Rods, fixed lengths 20, 40 ft |
| 3 (10) — 11 (36) | Gr 60 | ASTM A615/A615M GOST 380-2005 (S16ps ²) | ASTM A615/A615M | |
| 6, 8, 10, 12 | A I A240 | GOST 5781-82 GOST 34028-2016 GOST 380-2005 (S13kp, S13ps, S13sp) | GOST 5781-82 GOST 34028-2016 | Coils up to 830 kg |
| 10, 12, 14, 16, 18, 20, 22, 25, 30, 32, 36, 40 | A I A240 | GOST 5781-82 GOST 34028-2016 GOST 380-2005 (S13kp, S13ps, S13sp) | GOST 5781-82 GOST 34028-2016 | Rods, fixed lengths: 6 to 12 |
| 6, 8, 10, 12 | A III A400 A400S | GOST 5781-82 GOST 34028-2016 (25G2S, 35GS) | GOST 5781-82 GOST 34028-2016 | Coils up to 830 kg |
| 10, 12, 14, 16 | A III A400 A400S | GOST 5781-82 GOST 34028-2016 (25G2S, 35GS) | GOST 5781-82 GOST 34028-2016 | Rods, fixed lengths: 6 to 12, non-fixed lengths |
| 18, 20, 22, 25, 28, 32, 36, 40 | A III A400 A400S | GOST 5781-82 GOST 34028-2016 (25G2S, 35GS) | GOST 5781-82 GOST 34028-2016 | Rods, fixed lengths: 6 to 12 |

Wire mill: № 6 to 10; mill 250-1: № 8 to 14; mill 250-2: № 12 to 28; mill 450: № 32 to 40.

Note:

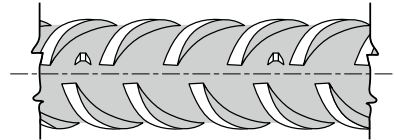
1. Steel grades used are shown in brackets;
2. W/o brackets: diameter in inches; in brackets: that in millimeters;
3. V-microalloyed.

Thermomechanically hardened rebars for reinforced concrete structures

Deformed bars

The products are manufactured at mill 300 of Caspian Steel.

The products are intended for reinforcement of normal and pre-stressed concrete structures.

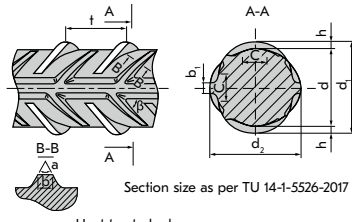


Section size as per GOST 34028-2016

Material and shape specification

| Diameter, mm | Class | Chemistry reference document | Techspecs reference document | Supplied lengths, product length, m |
|--|-------|------------------------------|------------------------------|-------------------------------------|
| 10, 12, 14, 16, 18, 20, 22, 25, 28, 32 | A500S | GOST 34028-2016 | GOST 34028-2016 | Fixed lengths: 6.0 to 12.0 as rods |

The products are manufactured at the structural steel plant of EVRAZ ZSMK.



Heat treated rebar

Material and shape specification

| Diameter, mm | Class | Chemistry reference document ¹ | Techspecs reference document | Supplied lengths, product length, m |
|--------------------------------|-------------|---|------------------------------|---|
| 10, 12, 14, 16 | A400S | TU 14-1-5254-2017 | TU 14-1-5254-2017 | Rods, fixed lengths: 6 to 12, non-fixed lengths |
| 18, 20, 22, 25, 28, 32, 36, 40 | A400S | TU 14-1-5254-2017 | TU 14-1-5254-2017 | Rods, fixed lengths: 6 to 12 |
| 10, 12, 14, 16 | A400, A400S | GOST 34028-2016 | GOST 34028-2016 | Rods, fixed lengths: 6 to 12, non-fixed lengths |
| 18, 20, 22, 25, 28 | A400, A400S | GOST 34028-2016 | GOST 34028-2016 | Rods, fixed lengths: 6 to 12 |
| 32, 36, 40 | A400, A400S | GOST 34028-2016 | GOST 34028-2016 | Rods, fixed lengths: 6 to 12 |
| 8, 10, 12, 14, 16 | A500S | TU 14-1-5254-2017 | TU 14-1-5254-2017 | Rods, fixed lengths: 6 to 12, non-fixed lengths |
| 18, 20, 22, 25, 28 | A500S | TU 14-1-5254-2017 | TU 14-1-5254-2017 | Rods, fixed lengths: 6 to 12 |
| 32, 36, 40 | A500S | TU 14-1-5254-2017 | TU 14-1-5254-2017 | Rods, fixed lengths: 6 to 12 |
| 8, 10, 12, 14, 16 | A500, A500S | GOST 34028-2016 | GOST 34028-2016 | Rods, fixed lengths: 6 to 12, non-fixed lengths |
| 18, 20, 22, 25, 28 | A500, A500S | GOST 34028-2016 | GOST 34028-2016 | Rods, fixed lengths: 6 to 12 |
| 32, 36, 40 | A500, A500S | GOST 34028-2016 | GOST 34028-2016 | Rods, fixed lengths: 6 to 12 |
| 10, 12, 14, 16 | A500SP | TU 14-1-5526-2017 | TU 14-1-5526-2017 | Rods, fixed lengths: 6 to 12, non-fixed lengths |
| 18, 20, 22, 25, 28, 32, 36, 40 | A500SP | TU 14-1-5526-2017 | TU 14-1-5526-2017 | Rods, fixed lengths: 6 to 12 |

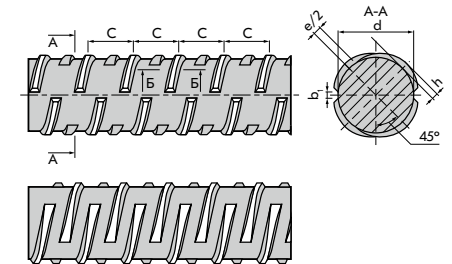
| Diameter, mm | Class | Chemistry reference document ¹ | Techspecs reference document | Supplied lengths, product length, m |
|--|--------|---|------------------------------|---|
| 10, 12, 14, 16, 18, 20, 22, 25, 32, 36, 40 | AS500S | TU 14-1-5543-2017 | TU 14-1-5543-2017 | Rods, fixed lengths: 6 to 12, non-fixed lengths |
| 10, 12, 16, 20, 25, 32, 40, 50 | V500V | BS4449:2005+A3:2016 | BS4449:2005+A3:2016 | Rods, fixed lengths: 6 to 12 |
| 10, 12, 16, 20, 25, 32, 40, 50 | V500V | MS 146:2014 | MS 146:2014 | Rods, fixed lengths: 6 to 12 |
| 10, 12, 14, 16, 20, 25, 28, 32, 40 | V500V | DIN 488:1-2009 | DIN 488:1-2009 | Rods, fixed lengths: 6 to 12 |
| 10, 12, 14, 16, 20, 25, 28, 32, 40 | V500V | NEN EN 6008-2008 | NEN EN 6008-2008 | Rods, fixed lengths: 6 to 12 |
| 10, 12, 14, 16, 18, 20, 22, 25, 28, 32, 40 | V500V | ITB-KOT-2017/0052 | ITB-KOT-2017/0052 | Rods, fixed lengths: 6 to 12 |
| 10, 12, 14, 16, 18, 20, 22, 25, 28, 32, 40 | V500V | IBDiM-KOT-2017/0013 | IBDiM-KOT-2017/0013 | Rods, fixed lengths: 6 to 12 |
| 10, 12, 16, 20, 25, 32, 40, 50 | V500V | CS2:2012 | CS2:2012 | Rods, fixed lengths: 6 to 12 |
| 10, 12, 14, 16, 18, 20, 22, 25, 28, 32, 36, 40 | A600S | TU 14-1-5645-2017 ² | TU 14-1-5645-2017 | Rods, fixed lengths: 6 to 12 |
| 10, 12, 14, 16, 18, 20, 22, 25, 28, 32, 36, 40 | A600SP | TU 14-1-5526-2017 ² | TU 14-1-5526-2017 var.2 | Rods, fixed lengths: 6 to 12 |
| 10, 12, 14, 16, 18 | A800 | GOST 34028-2016 | GOST 34028-2016 | Rods, fixed lengths: 6 to 12 |
| 10, 12, 14, 16, 18 | A1000 | GOST 34028-2016 | GOST 34028-2016 | Rods, fixed lengths: 6 to 12 |

Mill 250-1: № 8 to 14; mill 250-2: № 12 to 28; mill 450: № 32 to 40;
DIN: Germany; NEN: Netherlands; MS: Malaysia; BS: UK; ITB, IBDiM: Poland; CS: Hong Kong.

Note:

- Steel grades to be agreed with the customer;
- V- and Nb-microalloyed.

Helical/twisted rebars with four-rowed cross ribs



The products are manufactured at the structural steel plant of EVRAZ ZSMK.

The products have a better bond with concrete and are intended for reinforcing reinforced concrete structures for various purposes.

Material and shape specification

| Diameter, mm | Class | Chemistry reference document | Techspecs reference document | Supplied lengths, product length, m |
|--|-------------------|------------------------------|-------------------------------|---|
| 10, 12, 14, 16, 18, 20, 22, 25, 28, 32, 36, 40 | Au500SP | GOST 34028-2016 | TU 24.10.62-311-05757676-2019 | Rods, fixed lengths: 6 to 12, non-fixed lengths |
| 16, 18, 20, 22, 25, 28, 32, 36, 40 | Av500P Av500SP | GOST 34028-2016 | TU 24.10.62-311-05757676-2019 | Rods, fixed lengths: 6 to 12, complete with a connection sleeve as agreed with the customer |

| Section code | Profile dimensions, mm | | | | | | | Cross sectional area, F, cm ² | 1 m weight, kg | X-Y references | | | | | | | |
|--------------|------------------------|-----|------|------|----------------|----------------|------|--|----------------|----------------------------------|----------------------------------|----------------------------------|---------------------|----------------------------------|----------------------------------|----------------------------------|---------------------|
| | h | b | s | t | h _w | b _w | R | | | I _x , cm ⁴ | W _x , cm ³ | S _x , cm ³ | i _x , mm | I _y , cm ⁴ | W _y , cm ³ | S _y , cm ³ | i _y , mm |
| 60DB5 | 612 | 229 | 11.9 | 19.6 | 572.8 | 108.55 | 12.7 | 159.32 | 125.10 | 98,536.48 | 3,220.20 | 1,837.14 | 248.70 | 3,932.13 | 343.42 | 267.71 | 49.68 |
| 60DB6 | 617 | 230 | 13.1 | 22.2 | 572.6 | 108.45 | 12.7 | 178.52 | 140.10 | 111,971.15 | 3,629.50 | 2,075.04 | 250.45 | 4,513.82 | 392.51 | 306.53 | 50.28 |

Type DK: Additional Column beams (UC)

| | | | | | | | | | | | | | | | | | |
|-------|-------|-------|------|------|-------|--------|------|--------|--------|-----------|----------|--------|--------|----------|--------|--------|-------|
| 15DK1 | 152 | 152 | 5.8 | 6.6 | 138.8 | 73.10 | 7.6 | 28.61 | 22.50 | 1,213.15 | 159.60 | 88.58 | 65.12 | 386.64 | 50.87 | 38.82 | 36.76 |
| 15DK2 | 157 | 153 | 6.6 | 9.3 | 138.4 | 73.20 | 7.6 | 38.09 | 29.90 | 1,722.51 | 219.40 | 122.56 | 67.25 | 555.61 | 72.63 | 55.30 | 38.19 |
| 15DK3 | 162 | 154 | 8.1 | 11.6 | 138.8 | 72.95 | 7.6 | 47.47 | 37.30 | 2,227.67 | 275 | 155.52 | 68.51 | 706.89 | 91.80 | 70.06 | 38.59 |
| 20DK1 | 203 | 203 | 7.2 | 11 | 181 | 97.90 | 10.2 | 58.59 | 46 | 4,545.70 | 447.90 | 247.79 | 88.09 | 1,534.57 | 151.19 | 114.76 | 51.18 |
| 20DK2 | 206 | 204 | 7.9 | 12.6 | 180.8 | 98.05 | 10.2 | 66.58 | 52.30 | 5,272.37 | 511.90 | 284.77 | 88.99 | 1,783.95 | 174.90 | 132.78 | 51.76 |
| 20DK3 | 210 | 205 | 9.1 | 14.2 | 181.6 | 97.95 | 10.2 | 75.64 | 59.40 | 6,114 | 582.30 | 326.45 | 89.91 | 2,040.50 | 199.07 | 151.37 | 51.94 |
| 20DK4 | 216 | 206 | 10.2 | 17.4 | 181.2 | 97.90 | 10.2 | 91.06 | 71.50 | 7,662.28 | 709.50 | 401.74 | 91.73 | 2,537.25 | 246.33 | 187.28 | 52.78 |
| 20DK5 | 222 | 209 | 13 | 20.6 | 180.8 | 98 | 10.2 | 110.51 | 86.80 | 9,471.87 | 853.30 | 490.61 | 92.58 | 3,138.43 | 300.33 | 229.17 | 53.29 |
| 20DK6 | 229 | 210 | 14.5 | 23.7 | 181.6 | 97.75 | 10.2 | 126.77 | 99.50 | 11,328.82 | 989.40 | 574.62 | 94.53 | 3,663.55 | 348.91 | 266.49 | 53.76 |
| 25DK1 | 253 | 254 | 8.6 | 14.2 | 224.6 | 122.70 | 12.7 | 92.84 | 72.90 | 11,274.05 | 891.20 | 492.46 | 110.20 | 3,880.25 | 305.53 | 231.60 | 64.65 |
| 25DK2 | 256 | 255 | 9.4 | 15.6 | 224.8 | 122.80 | 12.7 | 102.08 | 80.10 | 12,567.16 | 981.80 | 545.12 | 110.96 | 4,313.58 | 338.32 | 256.60 | 65.01 |
| 25DK3 | 260 | 256 | 10.7 | 17.3 | 225.4 | 122.65 | 12.7 | 114.08 | 89.60 | 14,253.92 | 1,096.50 | 612.99 | 111.78 | 4,840.74 | 378.18 | 287.24 | 65.14 |
| 25DK4 | 264.0 | 257.0 | 11.9 | 19.6 | 224.8 | 122.55 | 12.7 | 128.88 | 101.20 | 16,369.03 | 1,240.10 | 698.30 | 112.70 | 5,549.34 | 431.86 | 328.23 | 65.62 |

Material and shape specification

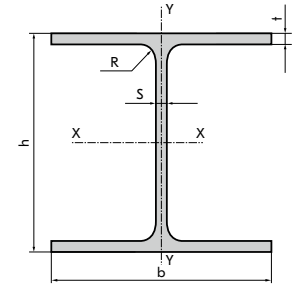
| Section reference document | Steel code | | Chemistry reference document | Techspecs reference document | Supplied lengths, product length, m | Manufacturer | |
|----------------------------|-----------------------------------|------------------------|--|------------------------------|--|--------------|--|
| | class | grade | | | | | |
| GOST R 57837-2017 | — | S13sp | GOST 380-2005 | GOST R 57837-2017 | Fixed lengths: 6.0 to 24.0, in 0.1 m increments; non-fixed lengths | EVRAZ NTMK | |
| | — | S255, S345, S355, S390 | GOST 27772-2015 | | | | |
| | 345, 355, 375, 390, 440 | — | GOST 19281-2014 | | | | |
| | S255B, S345B, S355B, S390B, S440B | — | GOST R 57837-2017 | | | | |
| | 390 | 10HSND | GOST 19281-2014 GOST R 55374-2012 | | | | GOST 19281-2014 GOST R 55374-2012 |
| | 345 | 15HSND | By agreement | | | | By agreement |
| | — | S13ps, S13sp | GOST 380-2005 | GOST R 57837-2017 | Fixed lengths: 6.0 to 12.0 | EVRAZ ZSMK | |
| | 345 | 09G2S | GOST 19281-2014 | | | | |
| | — | S235, S245, S255, S345 | GOST 27772-2015 | | | | |
| | S245B, S255B, S255B-1, S345B | — | GOST R 57837-2017 | | | | |
| | 345, S345 | 15HSND | GOST 6713-91 GOST 19281-2014 GOST R 55374-2012 | | | | GOST R 55374-2012 TU 24.10.73-303-05757676-2018 |
| | S345 | 14HGND | GOST R 55374-2012 TU 24.10.73-303-05757676-2018 | | | | GOST R 55374-2012 TU 24.10.73-303-05757676-2018 |

Parallel flange I-beams
(ASTM A6/A6M, TU 24107-016-00186269-2017)

The products are manufactured at the H-beam plant of EVRAZ NTMK.



Tech codes
EVRAZ NTMK
(rus)



Section mix

| Section code | | Profile dimensions, mm | | | | | | Section area, A, mm ² | 1 m weight, kg | I _x , cm ⁴ | W _x , cm ³ | S _x , cm ³ | i _x , cm | I _y , cm ⁴ | W _y , cm ³ | i _y , cm |
|------------------------|---------------------|------------------------|------------------|------------------|---------------------|---------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|---------------------|
| as per ASTM A6/A6M in: | code | profile depth, h | flange width, b | web thickness, s | flange thickness, t | flange thickness, t | | | | | | | | | | |
| inch/foot | millimeter/kilogram | code | profile depth, h | flange width, b | web thickness, s | flange thickness, t | Section area, A, mm ² | 1 m weight, kg | I _x , cm ⁴ | W _x , cm ³ | S _x , cm ³ | i _x , cm | I _y , cm ⁴ | W _y , cm ³ | i _y , cm | |
| W6×15 | W150×22.5 | 15K1A | 152 | 152 | 5.8 | 6.6 | 28.6 | 22.5 | 1,213 | 160 | 89 | 7 | 387 | 51 | 3.7 | |
| W6×20 | W150×29.8 | 15K2A | 157 | 153 | 6.6 | 9.3 | 37.9 | 29.8 | 1,723 | 219 | 123 | 7 | 556 | 73 | 3.8 | |
| W6×25 | W150×37.1 | 15K3A | 162 | 154 | 8.1 | 11.6 | 47.4 | 37.1 | 2,228 | 275 | 156 | 7 | 707 | 92 | 3.9 | |
| W8×18 | W200×26.6 | 20D1A | 207 | 133 | 5.8 | 8.4 | 33.9 | 26.6 | 2,580 | 249 | 139 | 9 | 330 | 50 | 3.1 | |
| W8×21 | W200×31.3 | 20D2A | 210 | 134 | 6.4 | 10.2 | 39.7 | 31.3 | 3,137 | 299 | 168 | 9 | 410 | 61 | 3.2 | |
| W8×31 | W200×46.1 | 20K2A | 203 | 203 | 7.2 | 11.0 | 58.9 | 46.1 | 4,546 | 448 | 248 | 9 | 1,535 | 151 | 5.1 | |
| W8×35 | W200×52 | 20K3A | 206 | 204 | 7.9 | 12.6 | 66.5 | 52 | 5,272 | 512 | 285 | 9 | 1,784 | 175 | 5.2 | |
| W8×40 | W200×59 | 20K4A | 210 | 205 | 9.1 | 14.2 | 75.5 | 59 | 6,114 | 582 | 326 | 9 | 2,040 | 199 | 5.2 | |
| W8×48 | W200×71 | 20K5A | 216 | 206 | 10.2 | 17.4 | 91.0 | 71 | 7,662 | 709 | 402 | 9 | 2,537 | 246 | 5.3 | |
| W8×58 | W200×86 | 20K6A | 222 | 209 | 13.0 | 20.6 | 110.0 | 86 | 9,472 | 853 | 491 | 9 | 3,138 | 300 | 5.3 | |
| W8×67 | W200×100 | 20K7A | 229 | 210 | 14.5 | 23.7 | 127.0 | 100 | 11,329 | 989 | 575 | 9 | 3,664 | 349 | 5.4 | |
| W10×22 | W250×32.7 | 25D2A | 258 | 146 | 6.1 | 9.1 | 41.9 | 32.7 | 4,888 | 379 | 212 | 11 | 473 | 65 | 3.4 | |
| W10×26 | W250×38.5 | 25D3A | 262 | 147 | 6.6 | 11.2 | 49.1 | 38.5 | 6,007 | 459 | 257 | 11 | 594 | 81 | 3.5 | |
| W10×30 | W250×44.8 | 25D4A | 266 | 148 | 7.6 | 13.0 | 57.0 | 44.8 | 7,108 | 534 | 301 | 11 | 703 | 95 | 3.5 | |
| W10×49 | W250×73 | 25K1A | 253 | 254 | 8.6 | 14.2 | 92.9 | 73 | 11,274 | 891 | 492 | 11 | 3,880 | 306 | 6.5 | |
| W10×54 | W250×80 | 25K2A | 256 | 255 | 9.4 | 15.6 | 102.0 | 80 | 12,567 | 982 | 545 | 11 | 4,314 | 338 | 6.5 | |
| W10×60 | W250×89 | 25K3A | 260 | 256 | 10.7 | 17.3 | 114.0 | 89 | 14,254 | 1,096 | 613 | 11 | 4,841 | 378 | 6.5 | |
| W10×68 | W250×101 | 25K4A | 264 | 257 | 11.9 | 19.6 | 129.0 | 101 | 16,369 | 1,240 | 698 | 11 | 5,549 | 432 | 6.6 | |
| W10×77 | W250×115 | 25K5A | 269 | 259 | 13.5 | 22.1 | 146.0 | 115 | 18,937 | 1,408 | 799 | 11 | 6,405 | 495 | 6.6 | |
| W10×88 | W250×131 | 25K6A | 275 | 261 | 15.4 | 25.1 | 167.0 | 131 | 22,149 | 1,611 | 923 | 12 | 7,446 | 571 | 6.7 | |
| W10×100 | W250×149 | 25K7A | 282 | 263 | 17.3 | 28.4 | 190.0 | 149 | 25,932 | 1,839 | 1,064 | 12 | 8,622 | 656 | 6.7 | |
| W10×112 | W250×167 | 25K8A | 289 | 265 | 19.2 | 31.8 | 212.0 | 167 | 30,015 | 2,077 | 1,213 | 12 | 9,879 | 746 | 6.8 | |
| W12×19 | W310×28.3 | 31U3A | 309 | 102 | 6.0 | 8.9 | 35.9 | 28.3 | 5,427 | 351 | 203 | 12 | 158 | 31 | 2.1 | |
| W12×22 | W310×32.7 | 31U4A | 313 | 102 | 6.6 | 10.8 | 41.8 | 32.7 | 6,496 | 415 | 240 | 12 | 192 | 38 | 2.1 | |
| W12×26 | W310×38.7 | 31B1A | 310 | 165 | 5.8 | 9.7 | 49.4 | 38.7 | 8,545 | 551 | 306 | 13 | 727 | 88 | 3.8 | |
| W12×30 | W310×44.5 | 31B2A | 313 | 166 | 6.6 | 11.2 | 56.7 | 44.5 | 9,961 | 636 | 355 | 13 | 855 | 103 | 3.9 | |
| W12×35 | W310×52 | 31B3A | 317 | 167 | 7.6 | 13.2 | 66.5 | 52 | 11,873 | 749 | 420 | 13 | 1,026 | 123 | 3.9 | |
| W14×22 | W360×32.9 | 36U1A | 349 | 127 | 5.8 | 8.5 | 41.9 | 32.9 | 8,268 | 474 | 271 | 14 | 291 | 46 | 2.6 | |

| Section code | | Profile dimensions, mm | | | | | Section area, A _s , mm ² | 1 m weight, kg | I _x , cm ⁴ | W _x , cm ³ | S _x , cm ³ | i _x , cm | I _y , cm ⁴ | W _y , cm ³ | i _y , cm |
|------------------------|---------------------|------------------------|------------------|-----------------|------------------|---------------------|--|----------------|----------------------------------|----------------------------------|----------------------------------|---------------------|----------------------------------|----------------------------------|---------------------|
| as per ASTM A6/A6M in: | | code | profile depth, h | flange width, b | web thickness, s | flange thickness, t | | | | | | | | | |
| inch/foot | millimeter/kilogram | | | | | | | | | | | | | | |
| W14×26 | W360×39 | 36U2A | 353 | 128 | 6.5 | 10.7 | 49.6 | 39 | 10,241 | 580 | 331 | 14 | 375 | 59 | 2.7 |
| W14×30 | W360×44.6 | 36B1A | 352 | 171 | 6.9 | 9.8 | 57.1 | 44.6 | 12,167 | 691 | 389 | 15 | 818 | 96 | 3.8 |
| W14×34 | W360×51 | 36B2A | 355 | 171 | 7.2 | 11.6 | 64.5 | 51 | 14,131 | 796 | 447 | 15 | 968 | 113 | 3.9 |
| W14×38 | W360×58 | 36B3A | 358 | 172 | 7.9 | 13.1 | 72.3 | 58 | 16,052 | 897 | 505 | 15 | 1,113 | 129 | 3.9 |
| W14×61 | W360×91 | 36SH1A | 353 | 254 | 9.5 | 16.4 | 115.0 | 91 | 26,755 | 1,516 | 840 | 15 | 4,483 | 353 | 6.2 |
| W14×68 | W360×101 | 36SH2A | 357 | 255 | 10.5 | 18.3 | 129.0 | 101 | 30,211 | 1,692 | 942 | 15 | 5,062 | 397 | 6.3 |
| W14×74 | W360×110 | 36SH3A | 360 | 256 | 11.4 | 19.9 | 141.0 | 110 | 33,155 | 1,842 | 1,030 | 15 | 5,570 | 435 | 6.3 |
| W14×82 | W360×122 | 36SH4A | 363 | 257 | 13.0 | 21.7 | 155.0 | 122 | 36,599 | 2,016 | 1,135 | 15 | 6,147 | 478 | 6.3 |
| W16×26 | W410×38.8 | 41U1A | 399 | 140 | 6.4 | 8.8 | 49.5 | 38.8 | 12,657 | 634 | 365 | 16 | 404 | 58 | 2.9 |
| W16×31 | W410×46.1 | 41U2A | 403 | 140 | 7.0 | 11.2 | 58.8 | 46.1 | 15,571 | 773 | 442 | 16 | 514 | 73 | 3 |
| W16×36 | W410×53 | 41B1A | 403 | 177 | 7.5 | 10.9 | 68.4 | 53 | 18,614 | 924 | 523 | 16 | 1,009 | 114 | 3.8 |
| W16×40 | W410×60 | 41B2A | 407 | 178 | 7.7 | 12.8 | 76.1 | 60 | 21,586 | 1,061 | 598 | 17 | 1,205 | 135 | 4 |
| W16×45 | W410×67 | 41B3A | 410 | 179 | 8.8 | 14.4 | 85.8 | 67 | 24,558 | 1,198 | 678 | 17 | 1,379 | 154 | 4 |
| W16×50 | W410×75 | 41B4A | 413 | 180 | 9.7 | 16.0 | 94.8 | 75 | 27,496 | 1,332 | 756 | 17 | 1,559 | 173 | 4.1 |
| W16×57 | W410×85 | 41B5A | 417 | 181 | 10.9 | 18.2 | 108.0 | 85 | 31,538 | 1,513 | 863 | 17 | 1,803 | 199 | 4.1 |
| W18×35 | W460×52 | 46U1A | 450 | 152 | 7.6 | 10.8 | 66.5 | 52 | 21,217 | 943 | 544 | 18 | 634 | 83 | 3.1 |
| W18×40 | W460×60 | 46U2A | 455 | 153 | 8.0 | 13.3 | 76.1 | 60 | 25,500 | 1,121 | 642 | 18 | 796 | 104 | 3.2 |
| W18×46 | W460×68 | 46U3A | 459 | 154 | 9.1 | 15.4 | 87.1 | 68 | 29,699 | 1,294 | 744 | 18 | 941 | 122 | 3.3 |
| W18×50 | W460×74 | 46B1A | 457 | 190 | 9.0 | 14.5 | 94.8 | 74 | 33,263 | 1,456 | 825 | 19 | 1,661 | 175 | 4.2 |
| W18×55 | W460×82 | 46B2A | 460 | 191 | 9.9 | 16.0 | 105.0 | 82 | 37,005 | 1,609 | 915 | 19 | 1,862 | 195 | 4.2 |
| W18×60 | W460×89 | 46B3A | 463 | 192 | 10.5 | 17.7 | 114.0 | 89 | 40,953 | 1,769 | 1,006 | 19 | 2,093 | 218 | 4.3 |
| W18×65 | W460×97 | 46B4A | 466 | 193 | 11.4 | 19.0 | 123.0 | 97 | 44,506 | 1,910 | 1,090 | 19 | 2,282 | 237 | 4.3 |
| W18×71 | W460×106 | 46B5A | 469 | 194 | 12.6 | 20.6 | 134.0 | 106 | 48,826 | 2,082 | 1,194 | 19 | 2,515 | 259 | 4.3 |
| W21×48 | W530×72 | 53B1A | 524 | 207 | 9.0 | 10.9 | 91.8 | 72 | 40,060 | 1,529 | 880 | 21 | 1,615 | 156 | 4.2 |
| W21×55 | W530×82 | 53B2A | 528 | 209 | 9.5 | 13.3 | 105.0 | 82 | 47,659 | 1,805 | 1,031 | 21 | 2,028 | 194 | 4.4 |
| W21×62 | W530×92 | 53B3A | 533 | 209 | 10.2 | 15.6 | 118.0 | 92 | 55,248 | 2,073 | 1,182 | 22 | 2,379 | 228 | 4.5 |
| W21×68 | W530×101 | 53B4A | 537 | 210 | 10.9 | 17.4 | 129.0 | 101 | 61,704 | 2,298 | 1,310 | 22 | 2,692 | 256 | 4.6 |
| W21×73 | W530×109 | 53B5A | 539 | 211 | 11.6 | 18.8 | 139.0 | 109 | 66,733 | 2,476 | 1,413 | 22 | 2,951 | 280 | 4.6 |
| W21×83 | W530×123 | 53B6A | 544 | 212 | 13.1 | 21.2 | 157.0 | 123 | 76,084 | 2,797 | 1,604 | 22 | 3,377 | 319 | 4.6 |
| W21×93 | W530×138 | 53B7A | 549 | 214 | 14.7 | 23.6 | 176.0 | 138 | 86,086 | 3,136 | 1,807 | 22 | 3,870 | 362 | 4.7 |
| W24×55 | W610×82 | 61U1A | 599 | 178 | 10.0 | 12.8 | 105.0 | 82 | 55,981 | 1,869 | 1,098 | 23 | 1,209 | 136 | 3.4 |
| W24×62 | W610×92 | 61U2A | 603 | 179 | 10.9 | 15.0 | 117.0 | 92 | 64,631 | 2,144 | 1,256 | 24 | 1,441 | 161 | 3.5 |
| W24×68 | W610×101 | 61B1A | 603 | 228 | 10.5 | 14.9 | 130.0 | 101 | 76,575 | 2,540 | 1,454 | 24 | 2,950 | 259 | 4.8 |
| W24×76 | W610×113 | 61B2A | 608 | 228 | 11.2 | 17.3 | 145.0 | 113 | 87,767 | 2,887 | 1,649 | 25 | 3,425 | 300 | 4.9 |
| W24×84 | W610×125 | 61B3A | 612 | 229 | 11.9 | 19.6 | 159.0 | 125 | 98,757 | 3,227 | 1,841 | 25 | 3,932 | 343 | 5 |
| W24×94 | W610×140 | 61B4A | 617 | 230 | 13.1 | 22.2 | 179.0 | 140 | 112,191 | 3,637 | 2,079 | 25 | 4,514 | 393 | 5 |
| W24×103 | W610×153 | 61B5A | 623 | 229 | 14.0 | 24.9 | 196.0 | 153 | 125,355 | 4,024 | 2,304 | 25 | 4,999 | 437 | 5.1 |
| HP10×42 | HP250×62 | 25K1AS | 246 | 256 | 10.5 | 10.7 | 80.0 | 62 | 8,775 | 713 | 397 | 10 | 2,995 | 234 | 6.1 |
| HP12×53 | HP310×79 | 31K1AS | 299 | 306 | 11.0 | 11.0 | 100.0 | 79 | 16,320 | 1,092 | 605 | 13 | 5,258 | 344 | 7.3 |
| HP12×74 | HP310×110 | 31K3AS | 308 | 310 | 15.4 | 15.5 | 141.0 | 110 | 23,707 | 1,539 | 865 | 13 | 7,707 | 497 | 7.4 |

Note:
Tolerances of shape, dimensions and weight: as per ASTM A6/A6M.

Product length

| Product length | PO specified lengths | | Fixed lengths | | | | | | | | | | | | | | | |
|----------------|----------------------|---|---------------|-----|-----|-----|------|------|------|------|------|------|------|------|------|------|------|------|
| | foot | m | 20 | 25 | 30 | 32 | 35 | 38 | 40 | 43 | 45 | 48 | 50 | 53 | 55 | 58 | 60 | 65 |
| | | | 6.1 | 7.6 | 9.2 | 9.8 | 10.7 | 11.6 | 12.2 | 13.1 | 13.7 | 14.6 | 15.2 | 16.2 | 16.8 | 17.7 | 18.3 | 19.8 |

Note:
I-beams can be ordered in lengths 6 to 24 m with the increments of 0.1 m.

Grade mix

| Steel code | Chemistry reference document | Techspecs reference document |
|------------|--|--|
| (A36) | ASTM A36/ A36M | ASTM A36/ A36M, ASTM A6/ A6M |
| 50 | ASTM A572/ A572M | ASTM A572/ A572M, ASTM A6/ A6M |
| (A992) | ASTM A992/ A992M | ASTM A992/ A992M, ASTM A6/ A6M |
| 44W, 50W | CSA G40.21 | CSA G40.21, ASTM A6/ A6M |
| 50 | ASTM A572/ A572M, / ASTM A992/ A992M | ASTM A572/ A572M, / ASTM A992/ A992M, ASTM A6/ A6M |
| 50/ 50W | ASTM A572/ A572M, / ASTM A992/ A992M, / CSA G40.21 | ASTM A572/ A572M, / ASTM A992/ A992M, / CSA G40.21, ASTM A6/ A6M |

ASTM and CSA standards regulating the I-beam supplies

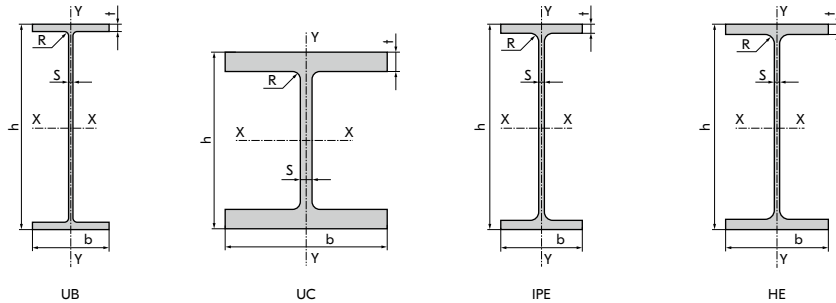
| Designation of a reference document | Name of a reference |
|-------------------------------------|---|
| ASTM A6/ A6M | Technical specification on rolled rods, sheets, sections, sheet piles of structural steel |
| ASTM A36/ A36M | Technical specification on structural carbon steel |
| ASTM A572/ A572M | Technical specification on sections of HSLA Nb- and V-alloyed structural steel |
| ASTM A992/ A992M | Technical specification on rolled sections from structural steel |
| CSA G40.21 | High quality structural steel |

Note:
Respective standard with its latest edition year to be specified in PO.

Parallel flange I-beams (BS EN 10365, TU 24107-016-00186269-2017)

The products are manufactured at the H-beam plant of EVRAZ NTMK.

Tech codes
EVRAZ NTMK
(rus)



| Section code | | Profile dimensions, mm | | | | | 1 m weight, kg | I _x , cm ⁴ | W _x , cm ³ | S _x , cm ³ | i _x , cm | I _y , cm ⁴ | W _y , cm ³ | i _y , cm |
|---------------------------|-------|------------------------|-----------------|------------------|---------------------|-----------|----------------|----------------------------------|----------------------------------|----------------------------------|---------------------|----------------------------------|----------------------------------|---------------------|
| as per BS EN 10365 | code | section depth, h | flange width, b | web thickness, s | flange thickness, t | radius, R | | | | | | | | |
| Universal beams UB | | | | | | | | | | | | | | |
| UB 254×146×31 | 25D1V | 251.4 | 146.1 | 6.0 | 8.6 | 7.6 | 31.1 | 4,414 | 351 | 197 | 11 | 448 | 61 | 3.4 |
| UB 254×146×37 | 25D2V | 256 | 146.4 | 6.3 | 10.9 | 7.6 | 37 | 5,537 | 433 | 242 | 11 | 571 | 78 | 3.5 |
| UB 254×146×43 | 25D3V | 259.6 | 147.3 | 7.2 | 12.7 | 7.6 | 43 | 6,544 | 504 | 283 | 11 | 677 | 92 | 3.5 |
| UB 305×102×28 | 31U2V | 308.7 | 101.8 | 6.0 | 8.8 | 7.6 | 28.2 | 5,366 | 348 | 201 | 12 | 155 | 31 | 2.1 |
| UB 305×102×33 | 31U3V | 312.7 | 102.4 | 6.6 | 10.8 | 7.6 | 32.8 | 6,502 | 416 | 240 | 12 | 194 | 38 | 2.2 |
| UB 305×165×40 | 31B1V | 303.4 | 165 | 6.0 | 10.2 | 8.9 | 40.3 | 8,503 | 561 | 312 | 13 | 764 | 93 | 3.9 |
| UB 305×165×46 | 31B2V | 306.6 | 165.7 | 6.7 | 11.8 | 8.9 | 46.1 | 9,899 | 646 | 360 | 13 | 896 | 108 | 3.9 |
| UB 305×165×54 | 31B3V | 310.4 | 166.9 | 7.9 | 13.7 | 8.9 | 54 | 11,696 | 754 | 423 | 13 | 1,063 | 127 | 3.9 |
| UB 356×127×33 | 36U1V | 349 | 125.4 | 6.0 | 8.5 | 10.2 | 33.1 | 8,250 | 473 | 271 | 14 | 280 | 45 | 2.6 |
| UB 356×127×39 | 36U2V | 353.4 | 126 | 6.6 | 10.7 | 10.2 | 39.1 | 10,172 | 576 | 329 | 14 | 358 | 57 | 2.7 |
| UB 356×171×45 | 36B1V | 351.4 | 171.1 | 7.0 | 9.7 | 10.2 | 45 | 12,066 | 687 | 387 | 15 | 811 | 95 | 3.8 |
| UB 356×171×51 | 36B2V | 355 | 171.5 | 7.4 | 11.5 | 10.2 | 51 | 14,136 | 796 | 448 | 15 | 968 | 113 | 3.9 |
| UB 356×171×57 | 36B3V | 358 | 172.2 | 8.1 | 13.0 | 10.2 | 57 | 16,039 | 896 | 505 | 15 | 1,108 | 129 | 3.9 |
| UB 356×171×67 | 36B4V | 363.4 | 173.2 | 9.1 | 15.7 | 10.2 | 67.1 | 19,463 | 1,071 | 605 | 15 | 1,362 | 157 | 4 |
| UB 406×140×39 | 41U1V | 398 | 141.8 | 6.4 | 8.6 | 10.2 | 39 | 12,509 | 629 | 362 | 16 | 410 | 58 | 2.9 |
| UB 406×140×46 | 41U2V | 403.2 | 142.2 | 6.8 | 11.2 | 10.2 | 46 | 15,686 | 778 | 444 | 16 | 538 | 76 | 3 |
| UB 406×178×54 | 41B1V | 402.6 | 177.7 | 7.7 | 10.9 | 10.2 | 54.1 | 18,723 | 930 | 527 | 16 | 1,021 | 115 | 3.8 |
| UB 406×178×60 | 41B2V | 406.4 | 177.9 | 7.9 | 12.8 | 10.2 | 60.1 | 21,597 | 1,063 | 600 | 17 | 1,203 | 135 | 4 |
| UB 406×178×67 | 41B3V | 409.4 | 178.8 | 8.8 | 14.3 | 10.2 | 67.1 | 24,331 | 1,189 | 673 | 17 | 1,365 | 153 | 4 |

| Section code | | Profile dimensions, mm | | | | | 1 m weight, kg | I _x , cm ⁴ | W _x , cm ³ | S _x , cm ³ | i _x , cm | I _y , cm ⁴ | W _y , cm ³ | i _y , cm |
|--------------------|-------|------------------------|-----------------|------------------|---------------------|-----------|----------------|----------------------------------|----------------------------------|----------------------------------|---------------------|----------------------------------|----------------------------------|---------------------|
| as per BS EN 10365 | code | section depth, h | flange width, b | web thickness, s | flange thickness, t | radius, R | | | | | | | | |
| UB 406×178×74 | 41B4V | 412.8 | 179.5 | 9.5 | 16.0 | 10.2 | 74.2 | 27,310 | 1,323 | 750 | 17 | 1,545 | 172 | 4 |
| UB 457×152×52 | 46U1V | 449.8 | 152.4 | 7.6 | 10.9 | 10.2 | 52.3 | 21,370 | 950 | 548 | 18 | 645 | 85 | 3.1 |
| UB 457×152×60 | 46U2V | 454.6 | 152.9 | 8.1 | 13.3 | 10.2 | 59.8 | 25,501 | 1,122 | 644 | 18 | 795 | 104 | 3.2 |
| UB 457×152×67 | 46U3V | 458 | 153.8 | 9.0 | 15.0 | 10.2 | 67.2 | 28,927 | 1,263 | 727 | 18 | 913 | 119 | 3.3 |
| UB 457×152×74 | 46U4V | 462 | 154.4 | 9.6 | 17.0 | 10.2 | 74.2 | 32,675 | 1,414 | 813 | 19 | 1,046 | 136 | 3.3 |
| UB 457×152×82 | 46U5V | 465.8 | 155.3 | 10.5 | 18.9 | 10.2 | 82.1 | 36,589 | 1,571 | 906 | 19 | 1,184 | 153 | 3.4 |
| UB 457×191×67 | 46B1V | 453.4 | 189.9 | 8.5 | 12.7 | 10.2 | 67.1 | 29,381 | 1,296 | 736 | 19 | 1,452 | 153 | 4.1 |
| UB 457×191×74 | 46B2V | 457 | 190.4 | 9.0 | 14.5 | 10.2 | 74.3 | 33,320 | 1,458 | 826 | 19 | 1,671 | 176 | 4.2 |
| UB 457×191×82 | 46B3V | 460 | 191.3 | 9.9 | 16.0 | 10.2 | 82 | 37,052 | 1,611 | 916 | 19 | 1,871 | 196 | 4.2 |
| UB 457×191×89 | 46B4V | 463.4 | 191.9 | 10.5 | 17.7 | 10.2 | 89.3 | 41,016 | 1,770 | 1,007 | 19 | 2,089 | 218 | 4.3 |
| UB 457×191×98 | 46B5V | 467.2 | 192.8 | 11.4 | 19.6 | 10.2 | 98.3 | 45,728 | 1,958 | 1,116 | 19 | 2,347 | 243 | 4.3 |
| UB 533×210×82 | 53B2V | 528.3 | 208.8 | 9.6 | 13.2 | 12.7 | 82.2 | 47,541 | 1,800 | 1,029 | 21 | 2,007 | 192 | 4.4 |
| UB 533×210×92 | 53B3V | 533.1 | 209.3 | 10.1 | 15.6 | 12.7 | 92.1 | 55,229 | 2,072 | 1,180 | 22 | 2,389 | 228 | 4.5 |
| UB 533×210×101 | 53B4V | 536.7 | 210 | 10.8 | 17.4 | 12.7 | 101 | 61,520 | 2,293 | 1,306 | 22 | 2,692 | 256 | 4.6 |
| UB 533×210×109 | 53B5V | 539.5 | 210.8 | 11.6 | 18.8 | 12.7 | 109 | 66,824 | 2,477 | 1,414 | 22 | 2,943 | 279 | 4.6 |
| UB 533×210×122 | 53B6V | 544.5 | 211.9 | 12.7 | 21.3 | 12.7 | 122 | 76,044 | 2,793 | 1,598 | 22 | 3,387 | 320 | 4.7 |
| UB 610×229×101 | 61B1V | 602.6 | 227.6 | 10.5 | 14.8 | 12.7 | 101.2 | 75,782 | 2,515 | 1,441 | 24 | 2,915 | 256 | 4.8 |
| UB 610×229×113 | 61B2V | 607.6 | 228.2 | 11.1 | 17.3 | 12.7 | 113 | 87,321 | 2,874 | 1,640 | 25 | 3,434 | 301 | 4.9 |
| UB 610×229×125 | 61B3V | 612.2 | 229 | 11.9 | 19.6 | 12.7 | 125.1 | 98,612 | 3,222 | 1,838 | 25 | 3,932 | 343 | 5 |
| UB 610×229×140 | 61B4V | 617.2 | 230.2 | 13.1 | 22.1 | 12.7 | 139.9 | 111,779 | 3,622 | 2,071 | 25 | 4,505 | 391 | 5 |

| Universal beams UC | | | | | | | | | | | | | | |
|---------------------------|-------|-------|-------|------|------|------|-------|--------|-------|-------|----|-------|-----|-----|
| UC 152×152×23 | 15K1V | 152.4 | 152.2 | 5.8 | 6.8 | 7.6 | 23 | 1,250 | 164 | 91 | 7 | 400 | 53 | 3.7 |
| UC 152×152×30 | 15K2V | 157.6 | 152.9 | 6.5 | 9.4 | 7.6 | 30 | 1,748 | 222 | 124 | 7 | 560 | 73 | 3.8 |
| UC 152×152×37 | 15K3V | 161.8 | 154.4 | 8 | 11.5 | 7.6 | 37 | 2,211 | 273 | 154 | 7 | 706 | 91 | 3.9 |
| UC 203×203×46 | 20K1V | 203.2 | 203.6 | 7.2 | 11 | 10.2 | 46.1 | 4,568 | 450 | 249 | 9 | 1,548 | 152 | 5.1 |
| UC 203×203×52 | 20K2V | 206.2 | 204.3 | 7.9 | 12.5 | 10.2 | 52 | 5,259 | 510 | 284 | 9 | 1,778 | 174 | 5.2 |
| UC 203×203×60 | 20K3V | 209.6 | 205.8 | 9.4 | 14.2 | 10.2 | 60 | 6,125 | 584 | 328 | 9 | 2,065 | 201 | 5.2 |
| UC 203×203×71 | 20K4V | 215.8 | 206.4 | 10 | 17.3 | 10.2 | 71 | 7,618 | 706 | 399 | 9 | 2,537 | 246 | 5.3 |
| UC 203×203×86 | 20K5V | 222.2 | 209.1 | 12.7 | 20.5 | 10.2 | 86.1 | 9,449 | 850 | 488 | 9 | 3,127 | 299 | 5.3 |
| UC 254×254×73 | 25K1V | 254.1 | 254.6 | 8.6 | 14.2 | 12.7 | 73.1 | 11,407 | 898 | 496 | 11 | 3,908 | 307 | 6.5 |
| UC 254×254×89 | 25K3V | 260.3 | 256.3 | 10.3 | 17.3 | 12.7 | 88.9 | 14,268 | 1,096 | 612 | 11 | 4,857 | 379 | 6.5 |
| UC 254×254×107 | 25K4V | 266.7 | 258.8 | 12.8 | 20.5 | 12.7 | 107.1 | 17,511 | 1,313 | 742 | 11 | 5,927 | 458 | 6.6 |
| UC 254×254×132 | 25K6V | 276.3 | 261.3 | 15.3 | 25.3 | 12.7 | 132 | 22,529 | 1,631 | 935 | 12 | 7,531 | 576 | 6.7 |
| UC 254×254×167 | 25K8V | 289.1 | 265.2 | 19.2 | 31.7 | 12.7 | 167.1 | 29,998 | 2,075 | 1,212 | 12 | 9,870 | 744 | 6.8 |

| Type IPE | | | | | | | | | | | | | | |
|-----------------|-------|-----|-----|-----|-----|----|------|-------|-----|-----|----|-----|----|-----|
| IPE 200 | 20B3V | 200 | 100 | 5.6 | 8.5 | 12 | 22.4 | 1,943 | 194 | 110 | 8 | 142 | 28 | 2.2 |
| IPE 200 O | 20B4V | 202 | 102 | 6.2 | 9.5 | 12 | 25.1 | 2,211 | 219 | 125 | 8 | 169 | 33 | 2.3 |
| IPE 300 A | 30B1V | 297 | 150 | 6.1 | 9.2 | 15 | 36.5 | 7,174 | 483 | 271 | 12 | 519 | 69 | 3.3 |

| Section code | | Profile dimensions, mm | | | | | 1 m weight, kg | I _x , cm ⁴ | W _x , cm ³ | S _x , cm ³ | i _x , cm | I _y , cm ⁴ | W _y , cm ³ | i _y , cm |
|--------------------|-------|------------------------|-----------------|------------------|---------------------|-----------|----------------|----------------------------------|----------------------------------|----------------------------------|---------------------|----------------------------------|----------------------------------|---------------------|
| as per BS EN 10365 | code | section depth, h | flange width, b | web thickness, s | flange thickness, t | radius, R | | | | | | | | |
| IPE 300 | 30B2V | 300 | 150 | 71 | 10.7 | 15 | 42.2 | 8,357 | 557 | 314 | 12 | 604 | 80 | 3.3 |
| IPE 300 O | 30B3V | 304 | 152 | 8 | 12.7 | 15 | 49.3 | 9,995 | 658 | 372 | 13 | 746 | 98 | 3.4 |
| IPE 450 A | 45B1V | 447 | 190 | 7.6 | 13.1 | 21 | 67.2 | 29,761 | 1,332 | 747 | 19 | 1,502 | 158 | 4.2 |
| IPE 450 | 45B2V | 450 | 190 | 9.4 | 14.6 | 21 | 77.6 | 33,745 | 1,500 | 851 | 18 | 1,675 | 176 | 4.1 |
| IPE 450 O | 45B3V | 456 | 192 | 11 | 17.6 | 21 | 92.4 | 40,926 | 1,795 | 1,023 | 19 | 2,085 | 217 | 4.2 |
| IPE 450 V | 45B4V | 460 | 194 | 12.4 | 19.6 | 21 | 103.6 | 46,203 | 2,009 | 1,151 | 19 | 2,396 | 247 | 4.3 |
| IPE 500 A | 50B1V | 497 | 200 | 8.4 | 14.5 | 21 | 79.4 | 42,937 | 1,728 | 973 | 21 | 1,939 | 194 | 4.4 |
| IPE 500 | 50B2V | 500 | 200 | 10.2 | 16 | 21 | 90.7 | 48,202 | 1,928 | 1,097 | 20 | 2,141 | 214 | 4.3 |
| IPE 500 O | 50B3V | 506 | 202 | 12 | 19 | 21 | 107 | 57,781 | 2,284 | 1,307 | 21 | 2,621 | 260 | 4.4 |
| IPE 500 V | 50B4V | 514 | 204 | 14.2 | 23 | 21 | 129 | 70,723 | 2,752 | 1,584 | 21 | 3,271 | 321 | 4.5 |
| IPE 550 A | 55B1V | 547 | 210 | 9 | 15.7 | 24 | 92.1 | 59,984 | 2,193 | 1,237 | 23 | 2,431 | 232 | 4.6 |
| IPE 550 | 55B2V | 550 | 210 | 11.1 | 17.2 | 24 | 106 | 67,122 | 2,441 | 1,394 | 22 | 2,667 | 254 | 4.5 |
| IPE 550 O | 55B3V | 556 | 212 | 12.7 | 20.2 | 24 | 123 | 79,162 | 2,848 | 1,632 | 23 | 3,223 | 304 | 4.5 |
| IPE 550 V | 55B4V | 566 | 216 | 17.1 | 25.2 | 24 | 159 | 102,344 | 3,616 | 2,103 | 23 | 4,264 | 395 | 4.6 |

Type HE

| | | | | | | | | | | | | | | |
|-----------|--------|-----|-----|------|------|----|------|--------|-------|-------|----|--------|-----|-----|
| HE 180 AA | 18K1V | 167 | 180 | 5 | 7.5 | 15 | 28.7 | 1,967 | 236 | 129 | 7 | 730 | 81 | 4.5 |
| HE 180 A | 18K2V | 171 | 180 | 6 | 9.5 | 15 | 35.5 | 2,510 | 294 | 162 | 7 | 924 | 103 | 4.5 |
| HE 180 B | 18K3V | 180 | 180 | 8.5 | 14 | 15 | 51.2 | 3,831 | 426 | 241 | 8 | 1,363 | 151 | 4.6 |
| HE 180 C | 18K4V | 190 | 183 | 11.5 | 19 | 15 | 69.8 | 5,543 | 583 | 338 | 8 | 1,944 | 212 | 4.7 |
| HE 180 M | 18K5V | 200 | 186 | 14.5 | 24 | 15 | 88.9 | 7,483 | 748 | 442 | 8 | 2,580 | 277 | 4.8 |
| HE 200 AA | 21K1V | 186 | 200 | 5.5 | 8 | 18 | 34.6 | 2,944 | 317 | 174 | 8 | 1,068 | 107 | 4.9 |
| HE 200 A | 21K2V | 190 | 200 | 6.5 | 10 | 18 | 42.3 | 3,692 | 389 | 215 | 8 | 1,335 | 134 | 5 |
| HE 200 B | 21K3V | 200 | 200 | 9 | 15 | 18 | 61.3 | 5,696 | 570 | 321 | 9 | 2,003 | 200 | 5.1 |
| HE 200 C | 21K4V | 210 | 203 | 12 | 20 | 18 | 81.9 | 8,029 | 765 | 440 | 9 | 2,794 | 275 | 5.2 |
| HE 200 M | 21K5V | 220 | 206 | 15 | 25 | 18 | 103 | 10,642 | 967 | 568 | 9 | 3,651 | 354 | 5.3 |
| HE 260 AA | 26K1V | 244 | 260 | 6.5 | 9.5 | 24 | 54.1 | 7,981 | 654 | 357 | 11 | 2,787 | 214 | 6.4 |
| HE 260 A | 26K2V | 250 | 260 | 7.5 | 12.5 | 24 | 68.2 | 10,455 | 836 | 460 | 11 | 3,667 | 282 | 6.5 |
| HE 260 B | 26K3V | 260 | 260 | 10 | 17.5 | 24 | 93 | 14,920 | 1,148 | 642 | 11 | 5,134 | 395 | 6.6 |
| HE 300 AA | 30K1V | 283 | 300 | 7.5 | 10.5 | 27 | 69.8 | 13,804 | 976 | 533 | 12 | 4,732 | 315 | 7.3 |
| HE 300 A | 30K2V | 290 | 300 | 8.5 | 14 | 27 | 88.3 | 18,264 | 1,260 | 692 | 13 | 6,308 | 421 | 7.5 |
| HE 300 B | 30K3V | 300 | 300 | 11 | 19 | 27 | 117 | 25,166 | 1,678 | 934 | 13 | 8,561 | 571 | 7.6 |
| HE 300 C | 30K4V | 320 | 305 | 16 | 29 | 27 | 177 | 40,951 | 2,559 | 1,463 | 13 | 13,735 | 901 | 7.8 |
| HE 320 AA | 32K1V | 301 | 300 | 8 | 11 | 27 | 74.2 | 16,448 | 1,093 | 598 | 13 | 4,957 | 330 | 7.2 |
| HE 320 A | 32K2V | 310 | 300 | 9 | 15.5 | 27 | 97.6 | 22,929 | 1,479 | 814 | 14 | 6,984 | 466 | 7.5 |
| HE 320 B | 32K3V | 320 | 300 | 11.5 | 20.5 | 27 | 127 | 30,824 | 1,927 | 1,075 | 14 | 9,237 | 616 | 7.6 |
| HE 320 C | 32K4V | 340 | 305 | 16 | 30.5 | 27 | 186 | 48,711 | 2,865 | 1,637 | 14 | 14,445 | 947 | 7.8 |
| HE 400 AA | 40SH1V | 378 | 300 | 9.5 | 13 | 27 | 92.4 | 31,254 | 1,654 | 912 | 16 | 5,860 | 391 | 7.1 |
| HE 400 A | 40SH2V | 390 | 300 | 11 | 19 | 27 | 125 | 45,071 | 2,311 | 1,281 | 17 | 8,562 | 571 | 7.3 |

| Section code | | Profile dimensions, mm | | | | | 1 m weight, kg | I _x , cm ⁴ | W _x , cm ³ | S _x , cm ³ | i _x , cm | I _y , cm ⁴ | W _y , cm ³ | i _y , cm |
|--------------------|--------|------------------------|-----------------|------------------|---------------------|-----------|----------------|----------------------------------|----------------------------------|----------------------------------|---------------------|----------------------------------|----------------------------------|---------------------|
| as per BS EN 10365 | code | section depth, h | flange width, b | web thickness, s | flange thickness, t | radius, R | | | | | | | | |
| HE 400 B | 40SH3V | 400 | 300 | 13.5 | 24 | 27 | 155 | 57,682 | 2,884 | 1,616 | 17 | 10,817 | 721 | 7.4 |
| HE 450 AA | 45SH1V | 425 | 300 | 10 | 13.5 | 27 | 99.7 | 41,891 | 1,971 | 1,092 | 18 | 6,086 | 406 | 6.9 |
| HE 450 A | 45SH2V | 440 | 300 | 11.5 | 21 | 27 | 140 | 63,725 | 2,897 | 1,608 | 19 | 9,464 | 631 | 7.3 |
| HE 450 B | 45SH3V | 450 | 300 | 14 | 26 | 27 | 171 | 79,891 | 3,551 | 1,991 | 19 | 11,720 | 781 | 7.3 |
| HE 500 AA | 50SH1V | 472 | 300 | 10.5 | 14 | 27 | 107 | 54,647 | 2,316 | 1,288 | 20 | 6,312 | 421 | 6.8 |
| HE 500 A | 50SH2V | 490 | 300 | 12 | 23 | 27 | 155 | 86,979 | 3,550 | 1,975 | 21 | 10,365 | 691 | 7.2 |
| HE 500 B | 50SH3V | 500 | 300 | 14.5 | 28 | 27 | 187 | 107,180 | 4,287 | 2,407 | 21 | 12,622 | 841 | 7.3 |
| HE 600 AA | 60SH1V | 571 | 300 | 12 | 15.5 | 27 | 129 | 91,879 | 3,218 | 1,812 | 24 | 6,992 | 466 | 6.5 |
| HE 600 A | 60SH2V | 590 | 300 | 13 | 25 | 27 | 178 | 141,215 | 4,787 | 2,675 | 25 | 11,270 | 751 | 7.1 |
| HE 600 B | 60SH3V | 600 | 300 | 15.5 | 30 | 27 | 212 | 171,048 | 5,702 | 3,213 | 25 | 13,529 | 902 | 7.1 |

Note:
Tolerances of shape, dimensions and weight: as per BS EN 10034.

Grade mix

| Steel code | Chemistry reference document | Techspecs reference document |
|---|------------------------------|---|
| S235JR S235JO S235J2 | DIN EN 10025-2 | DIN EN 10025-1 |
| S275JR S275JO S275J2 | | |
| S355JR S355JO S355J2 | | |
| Hot-rolled products made of structural steel grades | DIN EN 10025-1 | General delivery specifications |
| Hot-rolled products made of structural steel grades | DIN EN 10025-2 | Delivery specifications for non-alloyed structural steel grades |

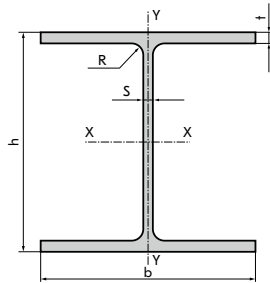
Supplied lengths, product length

| PO specified lengths | Fixed lengths |
|----------------------|-------------------------------|
| Product lengths | 6 to 24 m in 0.1 m increments |

Parallel flange I-beams (JIS G 3192, TU 4107-051-00186269-2020, TU 24107-016-00186269-2017)

The products are manufactured at the H-beam plant of EVRAZ NTMK.

Tech codes
EVRAZ NTMK
(rus)



Section mix

| Section code as per JIS G 3192 | | Code | Profile dimensions, mm | | | | | 1 m weight, kg | I _x , cm ⁴ | W _x , cm ³ | S _x , cm ³ | i _x , cm | I _y , cm ⁴ | W _y , cm ³ | i _y , cm |
|--------------------------------|---------------|--------|------------------------|-----------------|------------------|---------------------|-----------|----------------|----------------------------------|----------------------------------|----------------------------------|---------------------|----------------------------------|----------------------------------|---------------------|
| section series | cross section | | section depth, h | flange width, b | web thickness, s | flange thickness, t | Radius, R | | | | | | | | |
| 200×100 | 200×100 | 20B1S | 200 | 100 | 5.5 | 8 | 11 | 21.3 | 1,844 | 184 | 105 | 8 | 134 | 27 | 2.2 |
| 250×125 | 248×124 | 25B1S | 248 | 124 | 5 | 8 | 12 | 25.7 | 3,537 | 285 | 160 | 10 | 255 | 41 | 2.8 |
| | 250×125 | 25B2S | 250 | 125 | 6 | 9 | 12 | 29.6 | 4,052 | 324 | 183 | 10 | 294 | 47 | 2.8 |
| 300×150 | 298×149 | 30B1S | 298 | 149 | 5.5 | 8 | 13 | 32 | 6,319 | 424 | 238 | 12 | 442 | 59 | 3.3 |
| | 300×150 | 30B2S | 300 | 150 | 6.5 | 9 | 13 | 36.7 | 7,210 | 481 | 271 | 12 | 507 | 68 | 3.3 |
| 350×175 | 346×174 | 35B1S | 346 | 174 | 6 | 9 | 14 | 41.4 | 11,095 | 641 | 358 | 15 | 791 | 91 | 3.9 |
| | 350×175 | 35B2S | 350 | 175 | 7 | 11 | 14 | 49.6 | 13,560 | 775 | 434 | 15 | 984 | 112 | 3.9 |
| 400×200 | 396×199 | 40B1S | 396 | 199 | 7 | 11 | 16 | 56.6 | 20,020 | 1,011 | 564 | 17 | 1,447 | 145 | 4.5 |
| | 400×200 | 40B2S | 400 | 200 | 8 | 13 | 16 | 66 | 23,706 | 1,185 | 663 | 17 | 1,736 | 174 | 4.5 |
| 450×200 | 446×199 | 45B1S | 446 | 199 | 8 | 12 | 18 | 66.2 | 28,699 | 1,287 | 725 | 18 | 1,580 | 159 | 4.3 |
| | 450×200 | 45B2S | 450 | 200 | 9 | 14 | 18 | 76 | 33,453 | 1,487 | 840 | 19 | 1,871 | 187 | 4.4 |
| 500×200 | 496×199 | 50B2S | 496 | 199 | 9 | 14 | 20 | 79.5 | 41,872 | 1,688 | 957 | 20 | 1,844 | 185 | 4.3 |
| | 500×200 | 50B3S | 500 | 200 | 10 | 16 | 20 | 89.7 | 47,849 | 1,914 | 1,088 | 20 | 2,140 | 214 | 4.3 |
| 600×200 | 596×199 | 60B1S | 596 | 199 | 10 | 15 | 22 | 94.6 | 68,721 | 2,306 | 1,325 | 24 | 1,979 | 199 | 4.1 |
| | 600×200 | 60B2S | 600 | 200 | 11 | 17 | 22 | 105.5 | 77,638 | 2,588 | 1,489 | 24 | 2,277 | 228 | 4.1 |
| 200×150 | 194×150 | 20SH1S | 194 | 150 | 6 | 9 | 13 | 30.6 | 2,690 | 277 | 154 | 8 | 507 | 68 | 3.6 |
| 250×175 | 244×175 | 25SH1S | 244 | 175 | 7 | 11 | 16 | 44.1 | 6,122 | 502 | 279 | 10 | 984 | 112 | 4.2 |
| 300×200 | 294×200 | 30SH1S | 294 | 200 | 8 | 12 | 18 | 56.8 | 11,339 | 771 | 430 | 13 | 1,603 | 160 | 4.7 |
| 350×250 | 340×250 | 35SH2S | 340 | 250 | 9 | 14 | 20 | 79.7 | 21,678 | 1,275 | 706 | 15 | 3,650 | 292 | 6 |
| 400×300 | 390×300 | 40SH2S | 390 | 300 | 10 | 16 | 22 | 106.7 | 38,676 | 1,983 | 1,094 | 17 | 7,207 | 480 | 7.3 |
| 450×300 | 440×300 | 45SH1S | 440 | 300 | 11 | 18 | 24 | 123.5 | 56,072 | 2,549 | 1,413 | 19 | 8,110 | 541 | 7.2 |
| | 482×300 | 50SH1S | 482 | 300 | 11 | 15 | 26 | 114.2 | 60,371 | 2,505 | 1,396 | 20 | 6,762 | 451 | 6.8 |
| 500×300 | 488×300 | 50SH2S | 488 | 300 | 11 | 18 | 26 | 128.4 | 70,956 | 2,908 | 1,614 | 21 | 8,112 | 541 | 7 |
| | 582×300 | 60SH1S | 582 | 300 | 12 | 17 | 28 | 137 | 102,717 | 3,530 | 1,981 | 24 | 7,668 | 511 | 6.6 |
| 600×300 | 588×300 | 60SH5S | 588 | 300 | 12 | 20 | 28 | 151.1 | 118,118 | 4,018 | 2,245 | 25 | 9,018 | 601 | 6.8 |
| | 594×302 | 60SH6S | 594 | 302 | 14 | 23 | 28 | 174.6 | 137,329 | 4,624 | 2,599 | 25 | 10,583 | 701 | 6.9 |
| 700×300 | 692×300 | 70SH1S | 692 | 300 | 13 | 20 | 28 | 166 | 172,435 | 4,984 | 2,815 | 29 | 9,023 | 602 | 6.5 |
| | 700×300 | 70SH6S | 700 | 300 | 13 | 24 | 28 | 184.9 | 201,501 | 5,757 | 3,232 | 29 | 10,823 | 722 | 6.8 |
| 150×150 | 150×150 | 15K1S | 150 | 150 | 7 | 10 | 11 | 31.5 | 1,641 | 219 | 123 | 6 | 563 | 75 | 3.7 |
| 200×200 | 200×200 | 20K2S | 200 | 200 | 8 | 12 | 13 | 49.9 | 4,716 | 472 | 263 | 9 | 1,601 | 160 | 5 |
| 250×250 | 250×250 | 25K2S | 250 | 250 | 9 | 14 | 16 | 72.4 | 10,833 | 867 | 480 | 11 | 3,649 | 292 | 6.3 |
| 300×300 | 300×300 | 30K2S | 300 | 300 | 10 | 15 | 18 | 94 | 20,411 | 1,361 | 751 | 13 | 6,755 | 450 | 7.5 |
| 350×350 | 350×350 | 35K2S | 350 | 350 | 12 | 19 | 20 | 136.5 | 40,296 | 2,303 | 1,273 | 15 | 13,585 | 776 | 8.8 |

| Section code as per JIS G 3192 | | Code | Profile dimensions, mm | | | | | 1 m weight, kg | I _x , cm ⁴ | W _x , cm ³ | S _x , cm ³ | i _x , cm | I _y , cm ⁴ | W _y , cm ³ | i _y , cm |
|--------------------------------|---------------|-------|------------------------|-----------------|------------------|---------------------|-----------|----------------|----------------------------------|----------------------------------|----------------------------------|---------------------|----------------------------------|----------------------------------|---------------------|
| section series | cross section | | section depth, h | flange width, b | web thickness, s | flange thickness, t | radius, R | | | | | | | | |
| 400×400 | 400×400 | 40K2S | 400 | 400 | 13 | 21 | 22 | 171.7 | 66,623 | 3,331 | 1,836 | 17 | 22,412 | 1,121 | 10.1 |
| 400×400 | 414×405 | 40K4S | 414 | 405 | 18 | 28 | 22 | 231.9 | 92,773 | 4,482 | 2,513 | 18 | 31,026 | 1,532 | 10.2 |

Grade mix

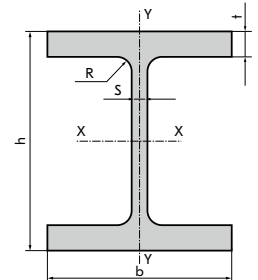
| Steel code | Chemistry reference document | Techspecs reference document |
|---|------------------------------|------------------------------|
| S400 | JIS G 3101 | TU 24107-051-00186269 |
| Rolled steel for general construction | | JIS G 3101 |
| Dimensions, weights and tolerable variations of hot-rolled steel sections | | JIS G 3192 |
| I-beams as per JIS G 3192:2014. Tech codes | | TU 24107-051-00186269 |

Supplied lengths, product length

| PO specified lengths | Fixed lengths |
|----------------------|-------------------------------|
| Product lengths | 6 to 12 m in 0.1 m increments |

Column I-beams for tower cranes

The products are manufactured at the H-beam plant of EVRAZ NTMK.



Section mix

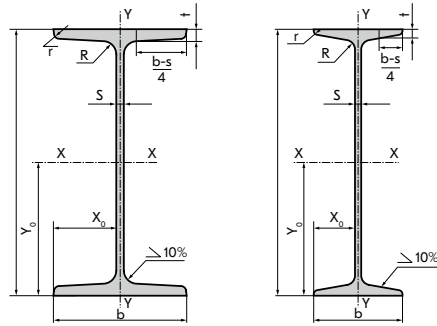
| Section code | Profile dimensions, mm | | | | | Cross-sectional area, F, cm ² | 1 m weight, kg | X-Y references | | | | | | |
|--------------|------------------------|-----|------|------|----|--|----------------|----------------------------------|----------------------------------|----------------------------------|---------------------|----------------------------------|----------------------------------|---------------------|
| | h | b | s | t | R | | | I _x , cm ⁴ | W _x , cm ³ | S _x , cm ³ | i _x , cm | I _y , cm ⁴ | W _y , cm ³ | i _y , cm |
| 15KR | 180.8 | 152 | 13.0 | 21.0 | 12 | 83.1 | 65.2 | 4,444 | 492 | 290.5 | 7.3 | 1,233 | 162 | 3.85 |

Material and shape specification

| Section reference document | Steel code | | Chemistry reference document | Techspecs reference document | Supplied lengths, product length, m |
|----------------------------|------------|--------|------------------------------|---|---|
| | class | grade | | | |
| TS 00186269-217-2018 | 345 | 09G2S | GOST 19281-2014 | GOST 19281-2014 TS 00186269-217-2018 | Fixed lengths: 6.0 to 24.0 0.1-m increments; non-fixed lengths |
| | 355 | 09G2SD | | | |
| | 375 | 12G2F | | | |
| | 390 | 12G2FD | | | |

Inclined-flange I-beams

The products are manufactured at the H-beam plant of EVRAZ NTMK.



Section mix

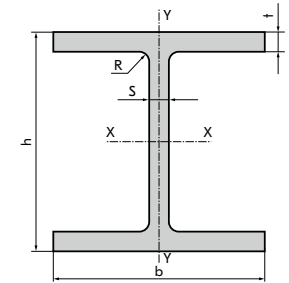
| Section code | Profile dimensions, mm | | | | | | Cross sectional area, F_r , cm^2 | 1 m weight, kg | X-Y references | | | | | | Manufacturer | |
|---|------------------------|-----|------|------|-----|-----|--------------------------------------|----------------|----------------|----------------|----------------|------------|----------------|----------------|--------------|------------|
| | h | b | s | t | R | r | | | I_x , cm^4 | W_x , cm^3 | S_x , cm^3 | i_x , cm | I_y , cm^4 | W_y , cm^3 | | i_y , cm |
| Monorail I-beam as per GOST 19425-74 | | | | | | | | | | | | | | | | |
| 24M | 240 | 110 | 8.2 | 14.0 | 11 | 4 | 48.7 | 38.3 | 4,640 | 387 | 223 | 9.75 | 276 | 50.2 | 2.38 | EVRAZ NTMK |
| 30M | 300 | 130 | 9.0 | 15.0 | 12 | 6 | 64.0 | 50.2 | 9,500 | 633 | 364 | 12.2 | 480 | 73.9 | 2.74 | |
| 36M | 360 | 130 | 9.5 | 16.0 | 14 | 6 | 73.8 | 57.9 | 15,340 | 852 | 493 | 14.4 | 518 | 79.7 | 2.65 | |
| 45M | 450 | 150 | 10.5 | 18.0 | 16 | 7 | 98.8 | 77.6 | 31,900 | 1,420 | 821 | 18.0 | 892 | 119.0 | 3.00 | |
| I-beam as per TU 24107-044-00186269-2018 | | | | | | | | | | | | | | | | |
| 18 | 180 | 90 | 5.1 | 8.1 | 9 | 3.5 | 23.4 | 18.4 | 1,290 | 143 | 81.4 | 7.42 | 82.6 | 18.4 | 1.88 | EVRAZ NTMK |
| I-beam as per 8239-89 | | | | | | | | | | | | | | | | |
| 12 | 120 | 64 | 4.8 | 7.3 | 7.5 | 3.0 | 14.7 | 11.50 | 350 | 58.4 | 33.7 | 4.88 | 27.9 | 8.72 | 1.38 | EVRAZ NTMK |
| 14 | 140 | 73 | 4.9 | 7.5 | 8.0 | 3.0 | 17.4 | 13.70 | 572 | 81.7 | 46.8 | 5.73 | 41.9 | 11.50 | 1.55 | |

Material and shape specification

| Steel code | | Chemistry reference document | Techspecs reference document | Supplied lengths, product length, m |
|-------------------|------------------------------|----------------------------------|----------------------------------|--|
| class | grade | | | |
| — | 3sp | GOST 380-2005 | GOST 380-2005 GOST 19425-74 | EVRAZ NTMK: Fixed lengths: 8.0 to 24.0. In 0.1-m increments; EVRAZ ZSMK: Non-fixed lengths: 6.0 – 12.0. In 0.1-m increments |
| — | S255 S345 S355 S390 | GOST 27772-2015 | GOST 27772-2015 GOST 19425-74 | |
| 265 295 325 | 09G2S 09G2SD | GOST 19281-2014 | GOST 19281-2014 GOST 19425-74 | |
| 345 | 09G2S 09G2SD | GOST 19281-2014 GOST 55374-12 | GOST 19281-2014 GOST 55374-12 | |
| | 15HSND 14HGND | GOST 55374-12 | GOST 55374-12 | |
| 390 | 10HSND | GOST 19281-2014 GOST 55374-12 | GOST 19281-2014 GOST 55374-12 | |

H-Bearing piles (TS 00186269-307-2016)

The products are manufactured at the H-beam plant of EVRAZ NTMK.



Section mix

| Section code | | Profile dimensions, mm | | | | | | 1 m weight, kg | I_x , cm^4 | W_x , cm^3 | S_x , cm^3 | i_x , cm | I_y , cm^4 | W_y , cm^3 | i_y , cm |
|--------------------|--------|------------------------|-----------------|------------------|---------------------|-----------|-----|----------------|----------------|----------------|----------------|------------|----------------|----------------|------------|
| as per BS EN 10365 | code | section depth, h | flange width, b | web thickness, s | flange thickness, t | radius, R | | | | | | | | | |
| 305×305×180 | 32K1VS | 326.7 | 319.7 | 24.8 | 24.8 | 15.2 | 180 | 40,973 | 2,508 | 1,448 | 13 | 13,546 | 847 | 7.7 | |
| 305×305×223 | 32K2VS | 337.9 | 325.7 | 30.3 | 30.4 | 15.2 | 223 | 52,699 | 3,119 | 1,827 | 14 | 17,577 | 1,079 | 7.9 | |

Grade mix

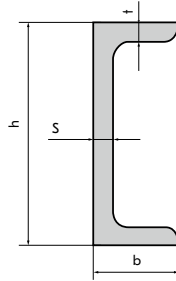
| Steel code | Chemistry reference document | Techspecs reference document |
|---|------------------------------|---|
| S235JR, S235JO, S235J2 | DIN EN 10025-2 | DIN EN 10025-1 |
| S275JR, S275JO, S275J2 | | |
| S355JR, S355JO, S355J2 | | |
| Hot-rolled products made of structural steel grades | DIN EN 10025-1 | General delivery specifications |
| Hot-rolled products made of structural steel grades | DIN EN 10025-2 | Delivery specifications for non-alloyed structural steel grades |

Supplied lengths, product length

| PO specified lengths | Fixed lengths |
|----------------------|-------------------------------|
| Product lengths | 6 to 24 m in 0.1 m increments |

Channels (GOST 8240-97)

The products are manufactured at the rail and structural steel plant and heavy section plant of EVRAZ NTMK, at the medium section mill 450 of EVRAZ ZSMK.



Section mix

| Channel number | Profile dimensions, mm | | | | Cross sectional area, F, cm ² | 1 m weight, kg | Manufacturer | |
|---------------------------------|------------------------|-----|-----|------|--|----------------|------------------------|------------------------|
| | h | b | s | t | | | | |
| Parallel-flange channels | | | | | | | | |
| 6.5P | 65 | 36 | 4.4 | 7.2 | 7.51 | 5.9 | EVRAZ ZSMK | |
| 8P | 80 | 40 | 4.5 | 7.4 | 8.98 | 7.05 | | |
| 10P | 100 | 46 | 4.5 | 7.6 | 10.9 | 8.59 | | |
| 12P | 120 | 52 | 4.8 | 7.8 | 13.3 | 10.4 | | |
| 14P | 140 | 58 | 4.9 | 8.1 | 15.6 | 12.3 | | |
| 16P | 160 | 64 | 5 | 8.5 | 18.1 | 14.2 | | |
| 18P | 180 | 70 | 5.1 | 8.7 | 20.70 | 16.30 | | EVRAZ ZSMK, EVRAZ NTMK |
| 20P | 200 | 76 | 5.2 | 9.0 | 23.40 | 18.40 | | |
| 22P | 220 | 82 | 5.4 | 9.5 | 27.70 | 21.00 | | EVRAZ NTMK |
| 24P | 240 | 90 | 5.6 | 10.0 | 30.60 | 24.00 | | |
| 27P | 270 | 95 | 6.0 | 10.5 | 35.2 | 27.7 | | |
| 30P | 300 | 100 | 6.5 | 11.0 | 40.50 | 31.8 | | |
| 40P | 400 | 115 | 8.0 | 13.5 | 61.50 | 48.3 | | |
| Inclined-flange channels | | | | | | | | |
| 6.5U | 65 | 36 | 4.4 | 7.2 | 7.51 | 5.9 | EVRAZ ZSMK | |
| 12U | 120 | 52 | 4.8 | 7.8 | 13.3 | 10.4 | | |
| 14U | 140 | 58 | 4.9 | 8.1 | 15.6 | 12.3 | | |
| 16U | 160 | 64 | 5.0 | 8.4 | 18.10 | 14.20 | EVRAZ ZSMK, EVRAZ NTMK | |
| 16aU | 160 | 68 | 5.0 | 9.0 | 19.50 | 15.30 | | |
| 18U | 180 | 70 | 5.1 | 8.7 | 20.70 | 16.30 | EVRAZ NTMK | |
| 18aU | 180 | 74 | 5.1 | 9.3 | 22.20 | 17.40 | | |
| 20U | 200 | 76 | 5.2 | 9.0 | 23.40 | 18.40 | | |
| 24U | 240 | 90 | 5.6 | 10.0 | 30.60 | 24.00 | | |
| 27U | 270 | 95 | 6.0 | 10.5 | 35.20 | 27.70 | | |
| 30U | 300 | 100 | 6.5 | 11.0 | 40.50 | 31.80 | | |
| 40U | 400 | 115 | 8.0 | 13.5 | 61.50 | 48.30 | EVRAZ ZSMK | |

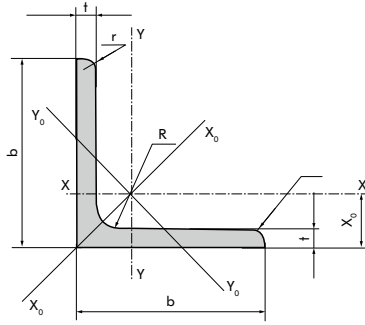
Material and shape specification

| Section reference document | Steel code | | Chemistry reference document | Techspecs reference document | Supplied lengths, channel length, m | Manufacturer |
|----------------------------|--|--|---|---------------------------------|---|--------------|
| | class | grade | | | | |
| GOST 8240-97 | — | St3sp | GOST 535-2005 | GOST 535-2005 | Fixed lengths: 4.2 to 12.0; fixed length multiples; non-fixed lengths; lengths over 12 meters is subject to agreement | EVRAZ NTMK |
| | — | S255 S345 S355 S390 | GOST 27772-2015 | GOST 27772-2015 | | |
| | 265, 295, 315, 325, 345, 355, 375, 390 | 09G2S 09G2SD 12G2F 12G2FD | GOST 19281-2014 | GOST 19281-2014 GOST 8240-97 | | |
| | 345 | 14HGNDTs | GOST 55374-12 | | | |
| | 390 | 10HSND | GOST 19281-2014 GOST R 55374-2012 | | | |
| | — | St3ps, St3sp | GOST 380-2005 | GOST 535-2005 | Fixed lengths, fixed length multiples, non-fixed length 6.0 to 12 | EVRAZ ZSMK |
| | 345 | 09G2S | GOST 19281-2014 | GOST 19281-2014 | | |
| | — | S235 | GOST 27772-2015 | | | |
| | — | S245 | | | | |
| | — | S255 | | | | |
| — | S345 | GOST 6713-91 GOST 19281-2014 GOST R 55374-2012 | | | | |
| 345, S345 | 15HSND | | | | | |
| — | S345 | GOST 55374-2012 TU 24-30305757676-2018 | GOST 55374-2012 TU 24-30305757676-2018 | | | |

Angles

Equal angles under (GOST 8509-93)

The products are manufactured at the light section/merchant mill 250-1 and at the medium section mill 450, at the heavy section plant of EVRAZ NTMK.



Section mix

| Angle number | Profile dimensions, mm | | | | Cross sectional area, cm ² | 1 m weight, kg | Manufacturer |
|--------------|------------------------|-----|-----|-----|---------------------------------------|----------------|--------------|
| | b | t | R | r | | | |
| 2.5 | 25 | 3 | 3.5 | 1.2 | 1.43 | 1.12 | EVRAZ ZSMK |
| | | 4 | | | 1.86 | 1.46 | |
| 3.2 | 32 | 3 | 4.5 | 1.5 | 1.86 | 1.46 | |
| | | 4 | | | 2.43 | 1.91 | |
| 3.5 | 35 | 3 | 4.5 | 1.5 | 2.04 | 1.60 | |
| | | 4 | | | 2.67 | 2.10 | |
| 4 | 40 | 3 | 5 | 1.7 | 2.35 | 1.85 | |
| | | 4 | | | 3.08 | 2.42 | |
| 4.5 | 45 | 4 | 5 | 1.7 | 3.48 | 2.73 | |
| | | 4 | | | 3.89 | 3.05 | |
| 5 | 50 | 5 | 5.5 | 1.8 | 4.80 | 3.77 | |
| | | 6 | | | 5.69 | 4.47 | |
| 5.6 | 56 | 5 | 6 | 2 | 5.41 | 4.25 | |
| | | 4 | | | 4.96 | 3.90 | |
| 6.3 | 63 | 5 | 7 | 2.3 | 6.13 | 4.81 | |
| | | 6 | | | 7.28 | 5.72 | |
| 7 | 70 | 5 | 8 | 2.7 | 6.86 | 5.38 | |
| | | 6 | | | 8.15 | 6.39 | |
| 7.5 | 75 | 7 | 9 | 3 | 9.42 | 7.39 | |
| | | 8 | | | 10.67 | 8.37 | |
| 8 | 80 | 5 | 9 | 3 | 7.39 | 5.80 | |
| | | 6 | | | 8.78 | 6.89 | |
| 8 | 80 | 7 | 9 | 3 | 10.15 | 7.96 | |
| | | 8 | | | 11.50 | 9.02 | |
| 9 | 90 | 6 | 10 | 3 | 12.83 | 10.70 | |
| | | 7 | | | 9.38 | 7.36 | |
| 9 | 90 | 7 | 10 | 3 | 10.85 | 8.51 | |
| | | 8 | | | 12.30 | 9.65 | |
| 10 | 100 | 6 | 12 | 4 | 10.61 | 8.33 | |
| | | 7 | | | 12.28 | 9.64 | |
| 10 | 100 | 8 | 12 | 4 | 13.93 | 10.93 | |
| | | 9 | | | 15.60 | 12.20 | |
| 10 | 100 | 6.5 | 12 | 4 | 12.82 | 10.06 | |
| | | 7 | | | 13.75 | 10.79 | |
| 10 | 100 | 8 | 12 | 4 | 15.60 | 12.25 | |
| | | 10 | | | 19.24 | 15.10 | |
| 10 | 100 | 12 | 12 | 4 | 22.80 | 17.90 | |

| Angle number | Profile dimensions, mm | | | | Cross sectional area, cm ² | 1 m weight, kg | Manufacturer |
|--------------|------------------------|----|----|-----|---------------------------------------|----------------|--------------|
| | b | t | R | r | | | |
| 11 | 110 | 7 | 12 | 4 | 15.15 | 11.89 | EVRAZ ZSMK |
| | | 8 | | | 17.20 | 13.50 | |
| 12.5 | 125 | 8 | 14 | 4.6 | 19.69 | 15.46 | EVRAZ ZSMK |
| | | 9 | | | 22.00 | 17.31 | |
| | | 10 | | | 24.33 | 9.10 | |
| | | 12 | | | 28.89 | 22.68 | |
| 14 | 140 | 9 | 14 | 4.6 | 24.72 | 19.41 | EVRAZ ZSMK |
| | | 10 | | | 27.33 | 21.45 | |
| 14 | 140 | 12 | 14 | 4.6 | 32.49 | 25.50 | EVRAZ ZSMK |
| | | 10 | | | 31.43 | 24.67 | |
| 16 | 160 | 11 | 16 | 5.3 | 34.42 | 27.02 | EVRAZ NTMK |
| | | 12 | | | 37.39 | 29.35 | |
| | | 14 | | | 43.57 | 34.20 | |
| | | 16 | | | 49.07 | 38.52 | |
| | | 18 | | | 54.79 | 43.01 | |
| | | 20 | | | 60.40 | 47.41 | |
| 18 | 180 | 11 | 16 | 5.3 | 38.80 | 30.47 | EVRAZ ZSMK |
| | | 12 | | | 42.19 | 33.12 | |
| 20 | 200 | 12 | 18 | 6 | 47.10 | 36.97 | EVRAZ ZSMK |
| | | 14 | | | 54.60 | 42.80 | |
| | | 16 | | | 61.98 | 48.65 | |
| | | 20 | | | 76.54 | 60.08 | |
| | | 25 | | | 94.29 | 74.02 | |
| | | 30 | | | 111.54 | 87.56 | |

Material and shape specification

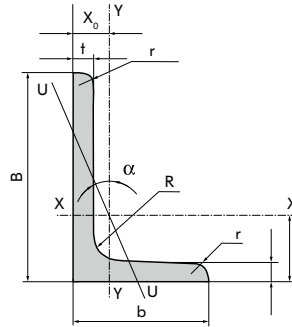
| RSection reference document | Steel code | | Chemistry reference document | Techspecs reference document | Manufacturer |
|-----------------------------|--------------------|-------------------------------------|--|-------------------------------|--------------|
| | class | grade | | | |
| GOST 8509-93 | — | ST3SP | GOST 380-2005 | GOST 535-2005 | EVRAZ NTMK |
| | — | S255, S345, S355, S390 | GOST 27772-2015 | GOST 27772-2015 | |
| | 265, 295, 325, 345 | S255, S345, S355, S390 | GOST 19281-2014 | GOST 19281-2014 | |
| | — | S235 (JR, JO, J2) S275 (JR, JO, J2) | DIN EN 10025-2 | DIN EN 10025-1 | |
| | 390 | 10HSND | GOST 19281-2014 | GOST 19281-2014 | |
| | 345 | 15HSND | GOST R 55374-2012 | GOST R 55374-2012 | |
| | | 14HGNDTs | GOST 55374-12 | GOST 55374-12 | |
| | — | S13ps, S13sp | GOST 380-2005 | GOST 535-2005 | |
| | 345 | 09G2S | GOST 19281-2014 | | |
| | — | S235 | GOST 27772-2015 | | |
| | — | S245 | | | |
| | — | S255 | | | |
| | — | S345 | | | |
| | 345, S345 | 15HSND | GOST 19281-2014, GOST R 55374-2012, GOST 6713-91 | | |
| | S345 | 14HGND | GOST R 55374-2012 | GOST R 55374-2012 | |
| | | | TU 24.10.73-303-05/576/6-2018 | TU 24.10.73-303-05/576/6-2018 | |

Supplied lengths, product length

Fixed lengths: 6.0 to 12.0 m (EVRAZ NTMK); 6.0 to 12.0 m (EVRAZ ZSMK); fixed length multiples; non-fixed lengths.

Unequal angles (GOST 8510-86)

The products are manufactured at the heavy section plant of EVRAZ NTMK.



Section mix

| Angle number | Profile dimensions, mm | | | | | Cross section area, cm ² | 1 m weight, kg | Axial inclination, tg α |
|--------------|------------------------|-----|----|------|-----|-------------------------------------|----------------|-------------------------|
| | B | b | t | R | r | | | |
| 16/10 | 160 | 100 | 10 | 13.0 | 4.3 | 25.28 | 19.85 | 0.39 |
| | | | 12 | | | 30.04 | 23.58 | 0.388 |
| | | | 14 | | | 34.72 | 27.26 | 0.385 |
| 20/12,5 | 200 | 125 | 11 | 14.0 | 4.7 | 34.87 | 27.37 | 0.392 |
| | | | 12 | | | 37.89 | 29.74 | 0.392 |
| | | | 14 | | | 43.87 | 34.43 | 0.390 |
| | | | 16 | | | 49.77 | 39.07 | 0.388 |

Material and shape specification

| Section reference document | Steel code | | Chemistry reference document | Techspecs reference document |
|----------------------------|---|------------------------------|---|---|
| | class | grade | | |
| GOST 8510-86 | — | St ^{sp} | GOST 380-2005 | GOST 380-2005 GOST 8510-86 |
| | — | S255 S345 S355 S390 | GOST 27772-2015 | GOST 8510-86 GOST 27772-2015 |
| | 265 295 325 345 355 375 390 | — | GOST 19281-2014 | GOST 19281-2014 GOST 8510-86 |
| | 375 390 | 12G2F 12G2FD | TU 14-1-53-91-99 | TU 14-1-53-91-99 GOST 8510-86 |
| | 390 345 | 10HSND 15HSND 14HGND | GOST 19281-2014 GOST R 55374-2012 GOST 55374-12 | GOST 19281-2014 GOST R 55374-2012 GOST 55374-12 |

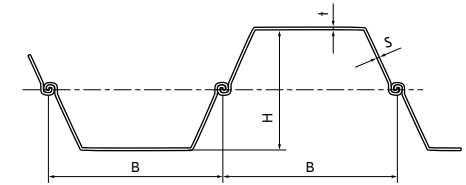
Supplied lengths, product length

Exact length — 6.0 to 8.0 m; exact length multiples; random length.

Sheet piles

The products are manufactured at the H-beam plant of EVRAZ NTMK.

The products are intended to construct hydraulic engineering structures, sea and river quays, man-made island fencing, offshore breakwaters and piers, dry docks and locks, bridge supports, embankments, bank protection and stream deflector cofferdams, retaining and filtration-proof walls, landslide slope protection, temporary/makeshift fencing of pits and other structures.



Material and shape specification

| Section code | Section reference document | Profile dimensions | | | | Cross section area, cm ² | 1 m weight, kg |
|--------------|----------------------------|-------------------------|--|------------------------------------|----------------------|-------------------------------------|----------------|
| | | cofferdam height, H, mm | distance between the lock centerlines of a sheet pile, B, mm | sheet pile flange thickness, S, mm | web thickness, t, mm | | |
| L5-UM | TU 0925-008-00186269-2016 | 430 | 506 | 11 | 23 | 145.1 | 113.8 |

Steel chemical composition

Sheet piles are manufactured of steels of the following strength classes:

- 240, 270, 320, 355, S345D as per this technical specification;
- S255, S345 — GOST 27772-2015;
- 345 as per GOST 19281-2014.

In 2011 the companies have mastered manufacturing increased strength sheet piles type L5-UM of class 345 strength steel and higher. Strength class S345D hereunder corresponds to that of S345 as per GOST 27772-2015 with 0.15% to 0.30% of copper as measured in ladle sample.

| Strength class | Element mass fraction in ladle sample, % | | | | | | |
|----------------|--|--------------------|--------------------|---------------|---------------------|---------------------|---------------------|
| | C | Mn | Si | Al | P | S | N |
| 240 | not to exceed 0.20 | — | — | at least 0.02 | not to exceed 0.030 | not to exceed 0.045 | not to exceed 0.012 |
| 270 | not to exceed 0.24 | — | — | | | | |
| 320 | | not to exceed 1.60 | not to exceed 0.55 | | | | |
| 355 | | not to exceed 0.15 | 1.30 to 1.70 | | | | |

The sheet piles can be made of increased corrosion resistant steel by copper alloying of classes 320, 355 as per TU 0925-008-00186269-2016:

- high copper 0.20 to 0.35% (320D, 355D);
- ultra high copper 0.35 to 0.35% (320D1, 355D1).

Sheet piles are manufactured from weldable steel, which is ensured by the steel's chemical composition with limited carbon equivalent which must not exceed 0.45%.

Note:

Cr, Ni, Cu = 0.30%.
Copper (Cu) in steel of S345D strength class shall be 0.15 % to 0.30%;
Certain amounts of vanadium (V), niobium (Nb), titanium (Ti) may be added to steel to improve its mechanical properties, their weight fractions to be stated in the quality document.
Symbol "-" means that the percentage of this element is not limited.

Industrial products

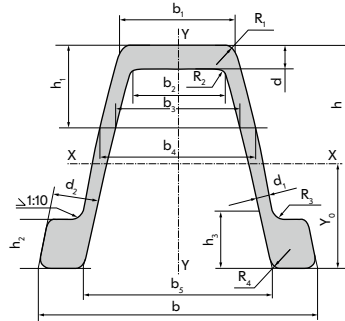
- EVRAZ is a powerful player at the industrial market. EVRAZ products are used in mining industry, machine building and metalware.
- EVRAZ companies have mastered new round and square bars.

| We work to improve quality
and diversify product mix



Mine working supports (pit props)

The products are manufactured at the heavy section plant of EVRAZ NTMK and at the medium section mill 450 of EVRAZ ZSMK.



Section mix

| Section number | 1 m weight, kg | Profile dimensions, mm | | | | | | | Manufacturer |
|----------------|----------------|------------------------|----------------|----------------|-------|----------------|------|----------------|------------------------|
| | | h | b ₁ | b ₂ | b | h ₂ | d | d ₁ | |
| SVP 17 | 17.1 | 94.0 | 60.0 | 91.5 | 131.5 | 23.0 | 8.5 | 5.7 | EVRAZ ZSMK |
| SVP 22 | 21.9 | 110.0 | 60.0 | 99.5 | 145.5 | 25.5 | 11.0 | 6.2 | EVRAZ ZSMK, EVRAZ NTMK |
| SVP 27 | 27.0 | 123.0 | 59.5 | 99.5 | 149.5 | 29.0 | 13.0 | 7.4 | |

Material and shape specification

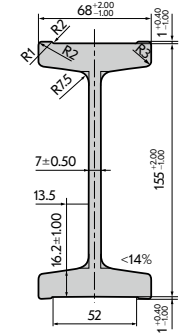
| Section reference document | Steel grade | Chemistry reference document | Techspecs reference document | Supplied lengths, product length, m | Manufacturer |
|----------------------------|-------------|------------------------------|--|--|--------------|
| GOST 18662-83 | St5sp | GOST 380-2005 | GOST 535-2005 TU 0931-126-00186269-2017 GOST 535-2005 GOST 18622-83 (class 2) | Fixed lengths: 4.2 to 12.0; multiples of fixed lengths; non-fixed lengths | EVRAZ NTMK |
| | St5sp/ps | | GOST 535-2005 GOST 18622-83 (class 2) | Fixed lengths: 9.0 to 12.0; multiples of fixed lengths; non-fixed lengths | EVRAZ ZSMK |

Supply conditions

The product is tied into the 10-t bundles.

Monorail

The products are manufactured at the medium section mill 450 of EVRAZ ZSMK.



Material and shape specification

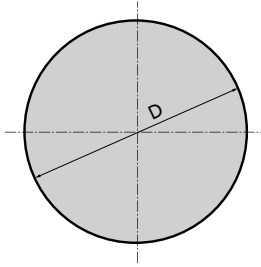
| Name | 1 m weight, kg | Steel grade | Chemistry reference document | Chemistry reference document | Supplied lengths, product length, m |
|--------|----------------|-------------|------------------------------|------------------------------|-------------------------------------|
| DP 155 | 24.0 | 09G2S | TU 0925-274-05757676-2009 | GOST 19281-2014 | Exact length — 6.1 or 9.1 |

Grinding balls

The products are manufactured to requirements of GOST 7524-2015.

In terms of hardness the balls are grouped as below:

1. normal surface hardness;
2. high surface hardness;
3. ultra high surface hardness;
4. ultra high surface hardness with limited hardness at 0.5 depth of a ball radius;
5. ultra high surface hardness with limited body hardness.



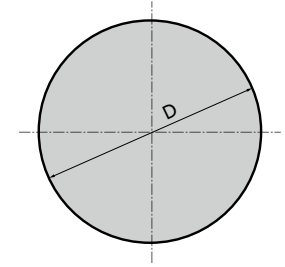
Ball mix

| Nominal ball diameter, mm | Calculated nominal weight of a ball, kg | Ball hardness groups | | | | | | | Manufacturer |
|---------------------------|---|---|--------|--------------------------------------|------------|--------|--------|--------|--------------|
| | | 1 | 2 | 3 | 4 | 5 | | | |
| | | minimum ball hardness, HRC/HB, at least | | | | | | | |
| at surface | | | | at the depth of 0.5 of a ball radius | at surface | body | | | |
| 30 | 0.128 | | | | | | | | |
| 40 | 0.294 | | | | | | | | |
| 50 | 0.58 | | | | | | | | |
| 60 | 0.98 | 43/401 | 48/453 | 53/514 | 53/514 | 43/401 | | | |
| 70 | 1.6 | | | | | | | — | EVRAZ ZSMK |
| 80 | 2.35 | | | | | | | | |
| 90 | 3.41 | 39/341 | 42/375 | 52/495 | 52/495 | 40/352 | | | |
| 100 | 4.62 | | | | | | | | |
| 60 | 0.98 | 43/401 | 48/583 | 53/514 | 53/514 | 43/401 | 60/590 | 53/514 | |
| 80 | 2.35 | | | | | | | | |
| 90 | 3.41 | 39/341 | 42/375 | 52/495 | 52/495 | 40/352 | 58/567 | 48/453 | EVRAZ NTMK |
| 100 | 4.62 | | | | | | | | |
| 120 | 8.03 | 35/302 | 38/331 | 50/477 | 50/477 | 35/302 | 56/545 | 43/401 | |

Note:

Upon the customer request the balls can be tested for impact resistance. The requirement is to be specified with the PO. Balls are delivered either in bulk or in big bags of 1t.

Hot-rolled round steel bars



Section mix

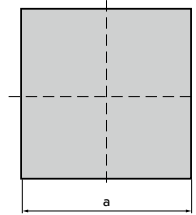
| Diameter, mm | Chemistry reference document ¹ | Techspecs reference document | Supplied lengths, product length, m | Plant/mill | Manufacturer |
|---|--|---|---|---|---------------------|
| 18 to 40 | GOST 380-2005 GOST 1050-2013 | GOST 2590-2006 GOST 535-2005 | Cut 6 to 12 to m rods | Mill 300 | EVRAZ Caspian Steel |
| 70, 75, 80, 85, 90, 95, 100, 105, 110, 115, 120, 125, 130, 140, 150 | GOST 380-2005 GOST 1050-2013 GOST 19281-2014 GOST 4543-2016 | GOST 2590-2006 GOST 535-2005 GOST 1050-2013 GOST 19281-2014 GOST 4543-2016 TU 14-1-1586-2006 | Fixed lengths, fixed length multiples, non-fixed length 6 to 12 | Heavy section plant Rail and structural steel mill | EVRAZ NTMK |
| 160 ² , 170 ² , 180 ² | | | | | |

Note:

1. Other steel grades can be used subject to agreement with the customer;
2. Rolling accuracy B2 as per GOST 2590-2006.

Hot-rolled square steel bars

The products are manufactured at the medium-section mill 250-1 of EVRAZ ZSMK.



Material and shape specification

| Nominal square side, a, mm | Tolerances, mm, at rolling accuracy B1 | Cross sectional area, cm ² | 1 m weight, kg | Section reference document | Techspecs reference document |
|----------------------------|--|---------------------------------------|----------------|----------------------------|---|
| 10 | +0,3/-0,5 | 1 | 0.785 | GOST 2591-2006 | GOST 535-2005 GOST 380-2005 GOST 19281-2014 |
| 12 | | 1.44 | 1.13 | | |
| 14 | | 1.96 | 1.539 | | |
| 16 | | 2.56 | 2.01 | | |

Hot-rolled rectangular steel bars/strips

The products are manufactured at the medium section mill 450 of EVRAZ ZSMK.

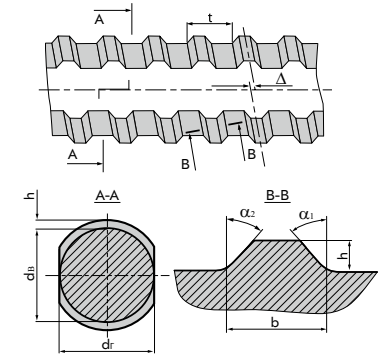
Material and shape specification

| Section reference document | Profile dimensions, mm | | Cross sectional area, cm ² | 1 m weight, kg | Techspecs reference document |
|----------------------------|------------------------|------------|---------------------------------------|----------------|--|
| | elevation | width | | | |
| GOST 103-2006 | 8 to 25 | 120 to 200 | GOST 103-2006 | GOST 103-2006 | GOST 535-2005 GOST 19281-2014 GOST 6713-91 GOST 4543-2016 GOST 5521-93 |

Note:

New dimensions are available: 20×180 mm, 25×200 mm.

Thermomechanically hardened rebars for reinforced concrete structures



Screw-type sections

The product is manufactured at the structural steel plant of EVRAZ ZSMK.

The products of classes GP10, GP15, GP20 and AV600 is intended for use in mining industry including fabrication of screw-type anchoring.

Material and shape specification

| Diameter, mm | Class | Chemistry reference document ¹ | Techspecs reference document | Supplied lengths, product length, m |
|----------------|---------------|---|------------------------------|---|
| 16, 20, 22, 25 | Av400S, Av500 | TU 14-1-5254-2017 | TU 14-1-5254-2017 | Rods, fixed lengths: 6 to 12, non-fixed lengths |
| 16V1, 16V | GP10 | TU 0932-272-05757676-2008 | TU 0932-272-05757676-2008 | |
| 20V1, 20V | GP15 | | | |
| 22V1, 25V1 | GP20 | | | |
| 22 | AV600 | TU 0932-283-05757676-2012 | TU 0932-283-05757676-2012 | |

Note:

1. Steel grades are to be agreed upon with the customer. Manufactured at the mill 250-2.

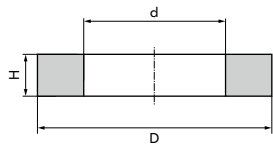
Rings

The products are manufactured at the wheel and tire plant of EVRAZ NTMK.
The shape, dimensions and weight of the black rings are to be agreed with size specifications.

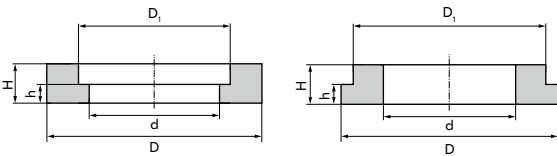
Ring grade mix

| Name | Steel grade | Chemistry reference document | Techspecs reference document | Profile dimensions, mm |
|----------------------------|------------------------------------|--|--|---|
| Quality carbon steel rings | 20, 25, 30, 35, 40, 45, 50, 55, 60 | GOST 1050-88 | TU 14-2R-408-2006 | Outside diameter: 900 to 2,675; inside diameter: 740 to 2,310; height: 80 to 180; thickness: 80 to 180 |
| Alloy steel rings | 40HN, 55F 45HNM | TU 14-2R-408-2006 TU 14-2R-473-2013 | TU 14-2R-408-2006 TU 14-2R-473-2013 | |

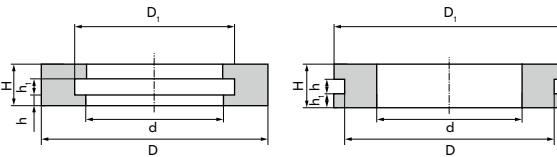
Plain rings



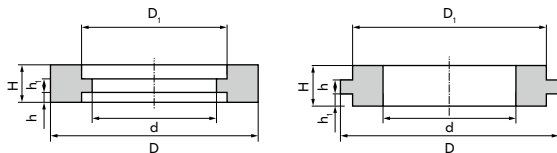
Stepped rings



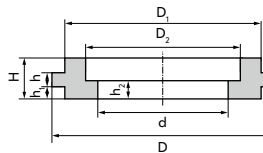
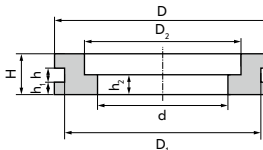
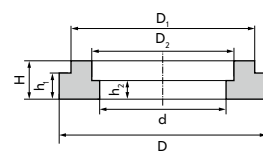
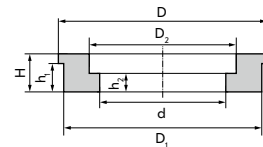
Grooved rings



Shouldered rings

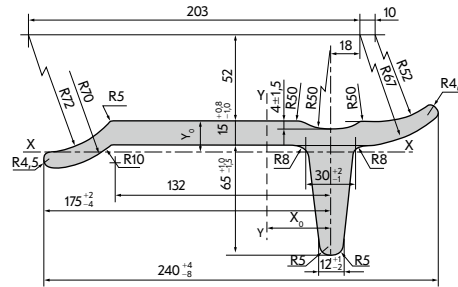


Combination rings

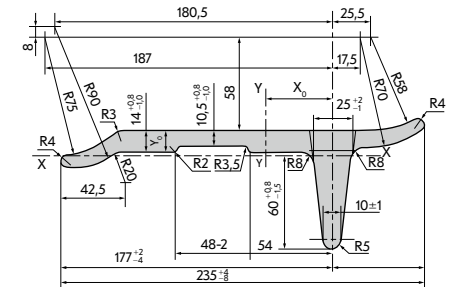


Track shoe (grouser) sections

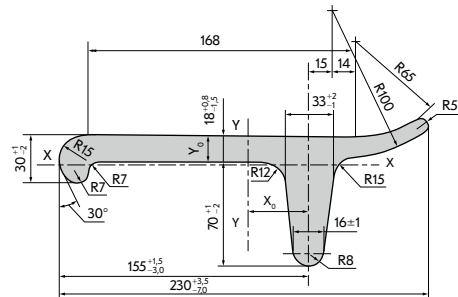
The products are manufactured at the rail and structural steel plant of EVRAZ NTMK.



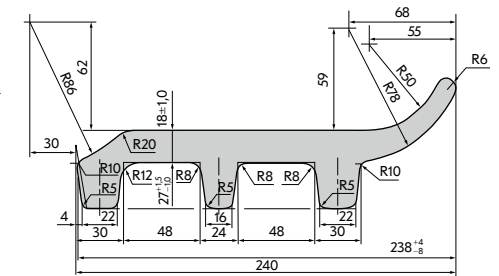
Tractor grouser bar №1



Tractor grouser bar №3



Tractor grouser bar №4



Grouser bar E

Material and shape specification

| Name | Section reference document | Section | | | 1 m weight, kg |
|---|----------------------------|------------------------|-----|---------|----------------|
| | | profile dimensions, mm | | | |
| | | H | B | d | |
| Grouser bar №1 | GOST 5422-73 | 80 | 240 | 15 | 35.9 |
| Grouser bar №3 | | 74 | 235 | 10.5/14 | 30.08 |
| Grouser bar №4 | | 88 | 230 | 18 | 43.64 |
| Excavator/power shovel track shoe section E | TU 0958-128-00186269-2018 | 45 | 238 | 18 | 46.5 |

Metalware

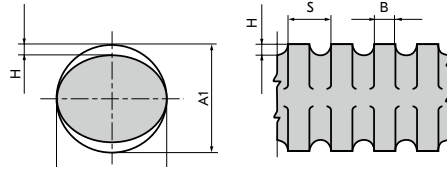
- Cold-worked rebar type V500S by EVRAZ ZSMK is a laureate of the "100 Best Products of Russia" competition.

We come up with
the best solutions for
our clients



Wire

The products are manufactured at EVRAZ ZSMK.



Wire for reinforcement of the reinforced concrete structures

Wire class VR-1 for reinforcement of the reinforced concrete structures

Material and shape specification

| Diameter, tolerances, mm | Application | Chemistry and techspecs reference document | Steel grade | Supply conditions |
|--|--|--|--|---------------------------------|
| Wire for reinforcement of the reinforced concrete structures class VR-1: \varnothing 2.5; 2.6; 2.7; 2.8; 3.0; 3.2; 3.3; 3.5; 3.6; 3.7; 3.8; 4.0; 4.2; 4.3; 4.4; 4.6; 4.7; 4.8; 5.0; 5.75 | Intended for reinforcement of the reinforced concrete structures | GOST 6727-80 TU 1213-290-05757676-2015 | Is manufactured of low carbon steel grades S1kp, 1ps, S12kp, S12ps, S13kp and S13ps as per GOST 380-2005 | In coils 500 to 1,000 kg, loose |

Plain wire

Material and shape specification

| Diameter, tolerances, mm | Application | Chemistry and techspecs reference document | Steel grade | Supply conditions |
|--|--|--|---|---|
| Low carbon steel wire for general application: 0.8(2.0) 2.2(9.0) Tolerances: \varnothing 0.8 \pm 1.0-0.05; \varnothing 1.1 \pm 1.2-0.06; \varnothing 1.3 \pm 2.0-0.10; \varnothing 2.2 \pm 3.2-0.12; \varnothing 3.5 \pm 6.0-0.16; \varnothing 6.3 to 9.0-0.20 | Intended for manufacturing of nails, meshes, fences, bundling and other applications | GOST 3282-74 | Manufactured from low carbon grades S1kp, Sp1ps, S12kp, S12ps, S13kp and S13ps as per GOST 380-2005 | Wire diameter up to 2.0 mm is produced in 60-kg coils and is packed in 10-coil bundles; wire dia. 2.5 to 9.0 mm in 500-to-1,100 kg rectangular bundles; wire dia. 2.5 to 6.0 mm in bundles of 150-165 kg, and is tied together in unit loads of 3 coils weighing 500 to 1,100 kg |
| Cold-heading carbon steel wire \varnothing 2.6 to 6.0 Tolerances: \varnothing 2.6 \pm 3.0-0.06; \varnothing 3.0 to 6.0-0.08 | Intended for manufacturing of fasteners by cold heading and cold extrusion | GOST 5663-79 | Manufactured of steel grade 10, 10kp, 15, 15kp, 20, 20kp as per GOST 1050-2013 | As per GOST 5663-79 diameter 2.6 to 5.9 mm in coils up to 100 kg. Diameter 6.0 mm in 1,000-kg coils |
| Alloy steel welding wire: \varnothing 0.8; 1.0; 1.2; 1.4; 1.5; 1.6; 2.0; 2.5; 3.0; 4.0; 5.0; Tolerances: \varnothing 0.8-0.07; \varnothing 1.0 \pm 1.5-0.09; \varnothing 1.6 \pm 3.0-0.12; \varnothing 4.0 to 5.0-0.16 | Intended for gasshielded welding | GOST 2246-70 TU 1227-267-05757676-2014 | Manufactured from steel grades Sv-08G2S as per GOST 2246-70 | 0.8 to 2.0 mm: in coils of up to 60 kg (\pm 2kg) packed in plastic film; 2.5 mm and over: in coils of up to 1,000 kg packed in polymeric film |
| Low carbon steel wire for electrode making: \varnothing 1.2 to 6.0 Tolerances: \varnothing 1.2 \pm 1.4-0.09; \varnothing 1.6-0.12; \varnothing 2.0-0.04; \varnothing 2.5 \pm 3.0-0.06; \varnothing 3.5 to 6.0-0.08 | Intended for electrode making | TU 24.34.11.130-299-57676-2017 | Manufactured of steel grades Sv-08A as per GOST 2246-70 | 0.8 to 2.0 mm: in coils of up to 60 kg. 2.5 mm and more: in coils of up to 1,100 kg, packed in polymeric film. |

Cold-worked rolled rebars

The products are manufactured at EVRAZ ZSMK.

Material and shape specification

| Dimensions (diameter), tolerances, mm | Application | Chemistry reference document | Steel grade | Supply conditions |
|---|--|---|---|----------------------------|
| Class V500S, \varnothing 5.0; 5.5; 6.0; 6.5; 7.0; 7.5; 8.0; 8.5; 9.0; 10.0 | Are intended for reinforcement of concrete elements both as individual rods and as parts of the reinforcement meshes | GOST R 52544-2006 TU 14-1-5627-20122 | The products are manufactured of steel grades S13Gps as per GOST 380-2005 | In coils of up to 2,500 kg |

Nails

The products are manufactured at EVRAZ ZSMK.

Material and shape specification

| Dimensions (diameter), tolerances, mm | Chemistry and techspecs reference document | Chemistry reference document, steel grade | Product length, mm | Supply conditions |
|---|--|---|--|---|
| Clout nails: 1.2 mm; Cone-headed nail: 1.8; 2.0; 2.5; 3.0; 3.5; 4.0; 5.0; 6.0 Tolerances on the nail length: within d, where d is the nail shank diameter | GOST 4028-63 GOST 283-75 | Manufactured of low carbon non-hardened wire group II, GOST 3282-74 and STO 899-77-2017 of steel grades S1kp, Sp1ps, S12kp, S12ps, S13kp and S13ps as per GOST 380-2005 | \varnothing 1.2-1.6; 20; 25; \varnothing 1.8-3.2; \varnothing 2.0-4.0; \varnothing 2.5-5.0; 6.0; \varnothing 3.0-7.0; 8.0; \varnothing 3.5-9.0; \varnothing 4.0-10.0; 12.0; \varnothing 5.0-15.0; \varnothing 6.0-20.0 | Corrugated cartons of 5 and 25 kg. A package/unit load is made of cartons with nails stowed on a wooden pallet. The size of the unit load is 1,200x800x1,000 mm, weight 1.2 t. The packages are wrapped in stretch film |

Mesh

The products are manufactured at EVRAZ ZSMK.

Steel mesh grid is intended for enclosures, heat insulations, walling in mines and pits, screening of materials.

Material and shape specification

| Dimensions, tolerances, mm | Chemistry and techspecs reference document | Chemistry reference document, steel grade | Product length, mm | Supply conditions |
|---|--|---|---|---|
| Mesh size 20 x 20: – wire diameter \varnothing 2.0; – coil length 15000 (+500); – coil width 1,000 (-45); – coil weight 30 kg | GOST 5336-80 | Manufactured of low carbon non-hardened wire group II as per GOST 3282-74 of steel grades S1kp, Sp1ps, S12kp, S12ps, S13kp and S13ps as per GOST 380-2005 | Mesh size 20 x 20 mm: 15 m; 35 x 35; 45 x 45; 60 x 60 mm: 10 m | In coils of up to 36.6 kg. The unit load is formed of 15 coils to a pallet (mesh size 20) or of 25 coils (mesh size 35; 45; 60) |
| Mesh size 35 x 35: – wire diameter \varnothing 2.5; – coil length 10000 (+500); – coil width 1,000 (-45); – coil weight 36.6 kg | | | | |
| Mesh size 45 x 45: – wire diameter \varnothing 2.5; – coil length 10000 (+500); – coil width 1,500 (-72); – coil weight 28 kg | | | | |
| Mesh size 60 x 60: – wire diameter \varnothing 2.5; – coil length 10000 (+500); – coil width 1,500 (-45); – coil weight 25 kg | | | | |

Single steel mesh grid with square mesh is made of wire dia. 2.0 and 2.5 mm.

Semi-products

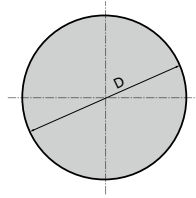
- EVRAZ is a leading Russian manufacturer of semi-products.

We keep to the industry trends and the market needs



Pipe blanks

The products are manufactured at EVRAZ NTMK.



Material and shape specification

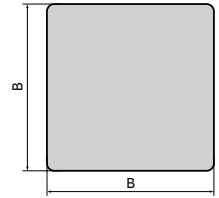
| Diameter, mm | Techspecs reference document | Chemistry reference document ¹ | Supplied lengths, product length, m | Plant |
|--|--|---|---|---------------------------------|
| 90, 95, 100, 105, 110, 115, 120, 125, 130, 140, 150 | GOST 34636-2020 | GOST 34636-2020 | Fixed lengths, fixed length multiples, non-fixed length 6 to 12 | Heavy section plant |
| | Tech specs agreed upon with the customer | Tech specs agreed upon with the customer | | |
| 156 | Tech specs agreed upon with the customer | Tech specs agreed upon with the customer | Fixed lengths, fixed length multiples, non-fixed length 6 to 12 | H-beam plant |
| 160 ² , 170 ² , 180 ² | GOST 34636-2020 | GOST 34636-2020 | Fixed lengths, fixed length multiples, non-fixed length 6 to 12 | Rail and structural steel plant |
| | Tech specs agreed upon with the customer | Tech specs agreed upon with the customer | | |
| 190, 210, 220 | Tech specs agreed upon with the customer | Tech specs agreed upon with the customer | Fixed lengths, fixed length multiples, non-fixed length 6 to 12 | H-beam plant |

Note:

- Steel grades are to be agreed upon with the customer;
- Rolling accuracy B2 as per GOST 34636-2020 (B2 as per GOST 2590-2006).

Square billets and blooms

Intended for rolling into long products.



Material and shape specification

| Square side | Techspecs reference document | Chemistry reference document ¹ | Supplied lengths, product length, m | Manufacturer |
|---|---|---|--|--------------|
| 60 (medium section plant), 100, 150 (BD), 120, 125, 130, 135, 140, 150 (rail plant) | TU 14-1-5237-93 | GOST 380-2005 | Exact length up to 12.0; the multiple of the exact length; random length | EVRAZ ZSMK |
| | GOST 2591-2006 | GOST 380-2005 GOST 4543-2016 GOST 1050-2013 | | |
| | GOST 380-2005 | GOST 380-2005 | | |
| | GOST 4543-2016 | GOST 4543-2016 | | |
| | GOST 1050-2013 | GOST 1050-2013 | | |
| 100, 110, 115, 120, 125, 130, 140, 150, 160, 180, 200 | TU 14-1-5237-93 TU 14-1-4492-2019 GOST 535-2005 GOST 1050-2013 GOST 4543-2016 Tech specs agreed upon with the customer | GOST 380-2005 GOST 1050-2013 GOST 4543-2016 Tech specs agreed upon with the customer | Fixed lengths, fixed length multiples, non-fixed length 6 to 12 | EVRAZ NTMK |

Note:

- Steel grades are to be agreed upon with the customer.

Mandrel bars

The products are manufactured at the heavy section plant of EVRAZ NTMK.

Material and shape specification

| Diameter, mm | Steel grade | Reference document | Supplied lengths, product length, m |
|---------------|-------------|---------------------------|---|
| 105, 110, 115 | 35HN2F | TU 0958-080-00186269-2012 | Fixed lengths: 20.0 |
| 85, 90 | 35HN2F | TU 0958-190-00186269-2012 | Fixed lengths (to be agreed upon in the P.O.) |

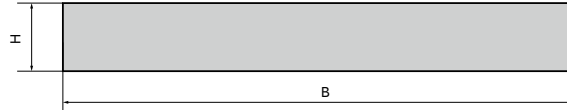
Rectangular billets

The products are manufactured at the H-beam plant of EVRAZ NTMK.

Material and shape specification

| Profile dimensions, mm | | Reference document | 1 m weight, kg | Manufacturer |
|------------------------|-------|----------------------|----------------|--------------|
| height | width | | | |
| 95 | 185 | TS 00186269-272-2018 | 136.2 | EVRAZ NTMK |
| 102 | 205 | | 162.4 | |
| 120 | 135 | | 125.0 | |
| 115 | 230 | TS 00186269-195-2012 | 205.5 | |
| | | TS 00186269-199-2019 | | |

EVRAZ NTMK



Material and shape specification

| Facility | Dimensions, mm | | | Tolerances, mm | | |
|----------|----------------|----------|-----------------|----------------|---------|--------|
| | thickness, H | width, B | length | thickness, H | width B | length |
| CMM №1 | D 430 (round) | — | 2,800 to 6,100 | ± 3 | ± 3 | ± 20 |
| | 300 | 360 | 2,800 to 6,100 | ± 3 | ± 3 | ± 30 |
| CMM №2 | 240 | 440 | 3,700 to 11,400 | +1/-5 | ± 4 | ± 30 |
| | | 310 | | | ± 3 | |
| | | 525 | | | ± 4 | |
| CMM №3 | 200 | 525 | 3,600 to 11,500 | ± 2 | ± 3 | ± 30 |
| | 300 | 380 | | ± 3 | ± 3 | |
| | 165/395 | 530 | | ± 3 | ± 4 | |
| | 165/485 | 620 | | ± 3 | ± 5 | |
| | 120/410 | 655 | | ± 3.5 | ± 5 | |

Note:

Grade mix: carbon, low alloy and alloy steel. Steel chemistry is to be agreed upon in the PO.
Technical requirements: agreed upon in the PO. The length specified is restricted by the caster performance.

EVRAZ ZSMK

Material and shape specification

| Facility | Dimensions | | | Tolerances, mm | | | Technical requirements |
|------------------------------|---------------|----------------|-------------|----------------|-------|--------|------------------------|
| | thickness, mm | width, mm | length, m | thickness | width | length | |
| CCM (rail plant) | 300 | 360 | 3.0 to 9.25 | ± 9 | ± 11 | ± 40 | STO 899-31-2011 |
| CCM (structural steel plant) | 130 | 130 | 9.0 to 12.0 | ± 4,5 | ± 4,5 | ± 50 | TU 14-1-3348-2009 |
| | 150 | 150 | | ± 4,5 | ± 4,5 | ± 50 | |
| | 150 | 200 | 6.0 to 12.0 | ± 4,5 | ± 6,0 | ± 50 | TU 14-1-3347-2009 |
| | 200, 250 | 1,050 to 1,750 | | ± 5 | ± 10 | ± 100 | |

Note:

Steel chemistry – GOST 380-2005, GOST 19281-2014, GOST 6713-91, GOST 4543-2016, GOST 1050-2013, GOST 801-78, GOST 5950-2000, GOST 14959-79, GOST 5950-2000, GOST 14959-2016;

| Technical requirements | 300 × 360 | 130 × 130 150 × 150 150 × 200 | 200, 250 × 1050-1750 |
|---|--------------------|-------------------------------------|----------------------|
| Rhomboidity, mm, not to exceed | 14 | 10,0 | 10,0 |
| Cut-end squareness, mm, not to exceed | 15 | 20,0 | 20,0 |
| Bow, not to exceed | 0.5% of the length | 0,0 | 5 mm / m |
| Bulging (concave) of faces, mm, not to exceed | 5 | 4,5 | 10,0 |

No teeming arrests, longitudinal and crosswise cracks, slag inclusions, slivers, ripples, scratches and dents of 2.0 mm and deeper, blisters, crystallization cracks and laps from torch cutting are to be tolerated on feedstock surface.

Slabs

Slabs for further re-rolling into flat products.

EVRAZ NTMK

Material and shape specification

| Facility | Dimensions, mm | | | Tolerances, mm | | |
|----------|----------------|----------------|--------------|----------------|---|--|
| | thickness, H | width, B | length | thickness, H | width, B | length |
| CCM №4 | 200 | 1,050 to 1,280 | 5,900-12,000 | +5/-3 | Till 1,500 (± 10); over 1,500 (± 1)% | Till 8,000 (± 50); over 8,000 (± 100) |
| | | 1,600 to 2,700 | | | | |
| | 250 | 1,050 to 1,280 | | | | |
| | | 1,500 to 2,700 | | | | |
| | 300 | 1,800 to 2,500 | | | | |
| | | 2,700 | | | | |

Note:

Grade mix – carbon, low alloy and alloy steel. Steel chemistry is to be agreed upon in the PO. Technical requirement: slabs: as per TU 14-1-3347 or TS by agreement;
The length specified is restricted by the caster performance.
Caster №4 width-to-thickness restrictions: 1,150 to 1,280 mm: 5 mm; over 1,500 mm: 15 mm.

EVRAZ ZSMK

Material and shape specification

| Facility | Dimensions | | | Tolerances, mm | | | Technical requirements |
|------------------------------|---------------|----------------|-------------|----------------|-------|--------|------------------------|
| | thickness, mm | width, mm | length, m | thickness | width | length | |
| CCM (structural steel plant) | 200, 250 | 1,050 to 1,750 | 6.0 to 12.0 | ± 5 | ± 10 | ± 100 | TU 14-1-3347-2009 |

Note:

Steel chemistry – GOST 380-2005, GOST 19281-2014, GOST 6713-91, GOST 4543-2016, GOST 1050-2013, GOST 801-78, GOST 5950-2000, GOST 14959-79, GOST 5950-2000, GOST 14959-2016;

| Technical requirements | 200, 250 × 1050-1750 |
|---|----------------------|
| Rhomboidity, mm, not to exceed | 10,0 |
| Cut-end squareness, mm, not to exceed | 20,0 |
| Bow, not to exceed | 5 mm / m |
| Bulging (concave) of faces, mm, not to exceed | 10,0 |

No teeming arrests, longitudinal and crosswise cracks, slag inclusions, slivers, ripples, scratches and dents of 2.0 mm and deeper, blisters, crystallization cracks and laps from torch cutting are to be tolerated on feedstock surface.

Cast iron

Produced at the blast furnaces of EVRAZ ZSMK, EVRAZ NTMK.

Steelmaking iron

Material and shape specification

| Iron grade | Reference document | Pig weight, kg, not to exceed | Element mass fraction, % | | | | | | | | | | | | | | | | Manufacturer | | |
|------------|--------------------|-------------------------------|--------------------------|-----|------------|-----|-----|---|---------------------------|-----|---|-----------------------------------|-----|-----|-----|------|------|------|--------------|------|------------|
| | | | Si | | Mn (group) | | | | P not to exceed (classes) | | | S not to exceed (of the category) | | | | | | | | | |
| | | | from | to | 1 | 2 | 3 | 4 | A | B | V | 1 | 2 | 3 | 4 | 5 | | | | | |
| | | | | | | | | | | | | | | | | | from | to | | from | to |
| P1 | GOST 805-95 | 9 | 0.5 | 0.9 | — | 0.5 | 0.5 | 1 | 1 | 1.5 | — | — | 0.1 | 0.2 | 0.3 | 0.01 | 0.02 | 0.03 | 0.04 | 0.05 | EVRAZ ZSMK |
| P2 | GOST 805-95 | 9 | — | 0.5 | — | 0.5 | 0.5 | 1 | 1 | 1.5 | — | — | 0.1 | 0.2 | 0.3 | 0.01 | 0.02 | 0.03 | 0.04 | 0.05 | |

Note:

| Additional pig iron specification | EVRAZ ZSMK |
|--|---------------------|
| Number of waists in the pigs | None |
| Standard carbon weight fraction, % | Between 4.3 and 5.0 |
| Fragments (lumps over 2 kg), %, not to exceed | 2 |
| Remaining surface slag | Not allowed |
| Lime coat resulting from the pig mold spraying | Tolerated |

DeV cast iron

Material and shape specification

| Iron grade | Reference document | Pig weight, kg | Element mass fraction, % | | | | | | | | | Manufacturer |
|------------|---------------------------|---------------------|--------------------------|-----|-----|------|------|------|------|------|------------|--------------|
| | | | C | S | Si | V | Mn | Ti | Cr | P | | |
| | | | not to exceed | | | | | | | | | |
| DV | TU 0811-038-00186269-2016 | Not to exceed 60 kg | 3.0 to 0.4 | 0.3 | 0.2 | 0.25 | 0.20 | 0.02 | 0.10 | 0.06 | EVRAZ NTMK | |

Steelmaking V cast iron

Material and shape specification

| Iron grade | Reference document | Pig weight, kg | Element mass fraction, % | | | | | | | | Manufacturer |
|------------|--------------------------------|------------------|--------------------------|--------------|------------|-------|-------|---------|-------|---------------|--------------|
| | | | V | Si | Mn | P | S | C | Cr | Ti | |
| V | GOST 805-95, TU 14-2R-458-2010 | Not to exceed 60 | ≈0.4 | ≈0.2 | ≈0.4 | ≈0.1 | ≈0.03 | — | — | — | EVRAZ NTMK |
| — | TS 00186269-297-2015 | Not to exceed 50 | 0.40 to 0.65 | 0.05 to 0.30 | 0.2 to 0.5 | ≈0.18 | ≈0.18 | 4.0-5.0 | ≈0.18 | ≈0.05 to 0.40 | |
| — | TS 00186269-297-2015 | Not to exceed 50 | 0.40 to 0.65 | 0.05 to 0.30 | 0.2 to 0.4 | ≈0.18 | ≈0.18 | 4.0-5.0 | ≈0.18 | ≈0.05 to 0.30 | |

Note:

| Additional pig iron specification | EVRAZ NTMK |
|-----------------------------------|---------------------|
| Number of waists in the pigs | 1 or 3 |
| Fragments (lumps over 2 kg) | Not to exceed 2%/4% |
| Remaining surface slag | Not allowed |
| Miscellaneous | — |

Annex.

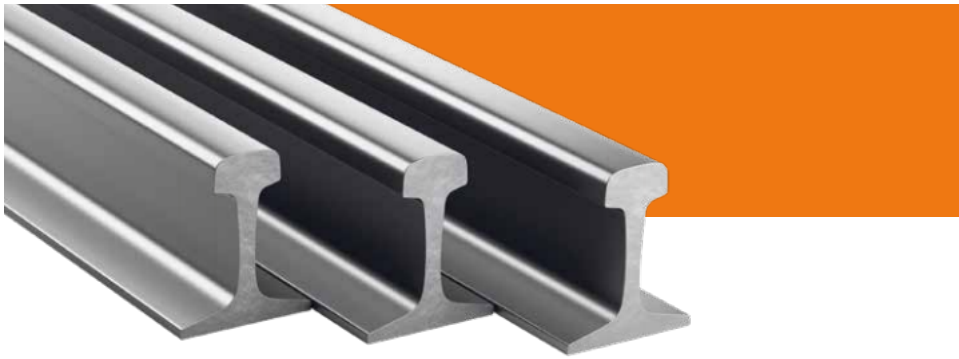
Production facilities

- EVRAZ ZSMK and EVRAZ NTMK go forward with the “Clean Air” national project.
- Upon the launch of blast furnace 6, the EVRAZ NTMK blast furnace complex has become the most advanced and environmentally friendly facility in Russia.

New technologies for
a better future



EVRAZ NTMK



EVRAZ NTMK is located in the Middle Urals, in Nizhny Tagil, the second largest city in Sverdlovsk region in terms of population and industrial output.

The company operates as a full-scale integrated steelmaker.

The Russia's largest titanium-magnetite ore field along with the in-house blast furnace feedstock dressing factory is the plant's raw materials base.

The most advanced and environmentally friendly blast furnace complex in the Russian Federation includes two effective blast furnaces (BF No. 6 and 7) each capable of putting out 2.55 million tpa of hot metal. The complex is equipped with the effective pulverized coal injection technology to save on natural gas and coke.

Liquid steel is produced at the Basic Oxygen Plant which can make 4,480 K tpa. Steel is produced from vanadium hot metal by a two-phase method where sellable V slag is produced at the first step.

Rolling operations include seven hot rolling mills which manufacture a wide mix of finished products:

- a rail and structural steel mill with a heat treatment plant: railway rails, crane rails, conductor rails for underground railways channels, track shoes (grouser) sections, railcar sections (Z-beam, railcar post, special channels), pipe blanks, round bars, square bars, axle blanks;
- a heavy section mill: channels, angles, railcar post, mine working supports (pit props), R33 rails, R65 fish plate blank, counter-rail angle type SP850, pipe blanks, round bars, square bars;

- a universal beam mill: general purpose I-beams, H-beams, UC beams, sheet piles, square and rectangular bars, pipe blanks;
- a wheel rolling mill: locomotive and railcar wheels, locomotive wheel centers, wheel blanks;
- a fire mill: railcar wheel tires, machine building rings;
- ball mills SPSH-40-80, SPSH-80-120, SPSH-60-120: grinding balls, diameters 40 to 120 mm.



EVRAZ ZSMK



EVRAZ ZSMK is located in Novokuznetsk and is the largest steelmaker in Siberia.

Since July 1, 2011 ZSMK and NKMK have merged into EVRAZ – Consolidated West Siberian Metallurgical Plant. EVRAZ ZSMK includes the construction steel facility and the rail facility which represent the integrated steelmaking company. In 2018, Evrazruda, which consolidated several mining and dressing companies of the Kemerovo region, has become the mining unit of EVRAZ ZSMK. The company operates as a full-scale integrated steelmaker.

Hot metal is manufactured in three blast furnaces of the total usable volume of 8,000 m³. Blast furnaces №1 and 3: 3,000 m³, blast furnace № 2: 2,000 m³. Each blast furnace is equipped with four stoves.

Steelmaking operations of the construction steel facility comprise two oxygen melt plants, five converters (three 160-t converters and two 350-t converters), bar and slab strand casters and an ingot teeming plant.

The rolling plant of the construction steel plant comprises:

- a breakdown mill 1,250 (square bars, slabs);
- a continuous bar mill (square bars);
- a wire mill 250-1 (wire rod, rebars, round bars);
- two light section mills:
 - 250-1 (rebars, round bars, angles),
 - 250-2 (rebars, round bars);
- a medium section mill 450 (special interchangeable section type SVP, I-beam, channel, monorail beam, angle, round bar, square bar 60 x 60, rebar);
- a steel rolling mill (SPrP): wire, nails and mesh.

EVRAZ ZSMK Rail Mill is the leading manufacturer in terms of rail range in Russia and worldwide. The rail and beam mill produces railway, tram line and underground railway rails, rails for turnouts. Furthermore, ball mills 1 and 2 located on the same premises produce grinding balls of various diameter.

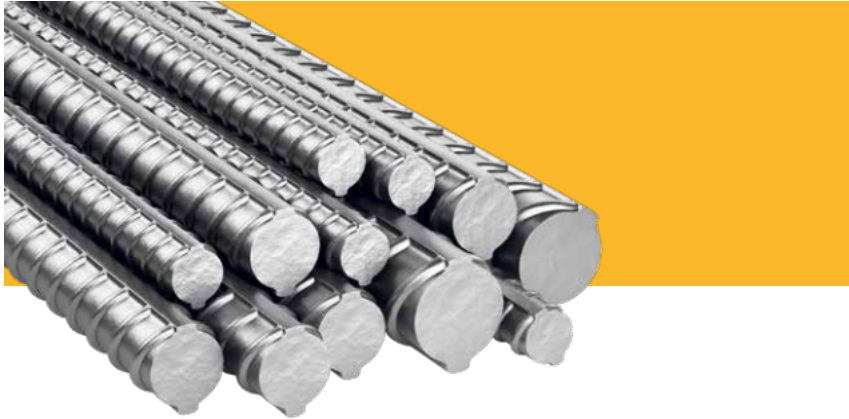
In April 2013 EVRAZ has completed a large-scale revamping project of the rail and beam plant. In fact, a brand new production facility was launched equipped with cutting-edge machinery: a universal rolling mill by SMS MEER, a SES rail head-hardening plant, a KOCH cooling bed, a BRONKS roller straightening plant, a non-destructive test line with several rail test phases, drilling and cutting machines by MFL, hydraulic presses by GEISMAR.

After revamping EVRAZ ZSMK has become one of the world's most modern rail manufacturers. The integrated steelmaker was the first in Russia and the CIS to master manufacturing of rails up to 100 meters long using the innovative head-hardening process.

The design capacity of the steelmaking operations of the rail facility is 950 K tpa of liquid steel. Liquid steel is produced in an electric steelmaking furnace of the rated capacity of 100 tons; secondary metallurgy: ladle metallurgy furnaces and a VD degasser.



EVRAZ Caspian Steel



EVRAZ Caspian Steel is a manufacturer of light sections. Located in Kostanay, the Republic of Kazakhstan. The investment project was implemented by "Evraz Caspian Steel" LLC, where 65% of the shares belong to EVRAZ, 35% — to JSC "Caspian Group".

The plant was commissioned in December 2013. Its construction took two and a half years. The investments totaled 131 million US dollars.

The design capacity of the rolling mill: 450 K tpa of rebars, steel billets are sourced from EVRAZ ZSMK. The products of the plant are marketed in Kazakhstan and exported to Ukraine, Tajikistan, Kyrgyzstan, etc.).

The plant is based on modern engineering where advanced technologies are used. Siemens SPA, Italy, was the general supplier of equipment for the company. During the project implementation the environmental issues were a special focus. Indeed, there is a zero environmental impact on water bodies.

Product mix of EVRAZ Caspian Steel:

- hot-rolled round steel;
- hot-rolled deformed rebar sections for reinforcement of reinforced concrete structures;
- ebars for reinforced concrete structures.

Rebars are manufactured in compliance with the national standards. Product quality is ensured by the latest technological equipment and quality inspection in the testing laboratory of the plant. All products are certified to comply with regulatory documents in the Kostanay branch of JSC "National Center for Expertise and Certification". The company has passed the certification procedure for quality management system ST RK ISO 9001-2009 (ISO 9001: 2008).

The 6S system is in place, which offers the principles of lean production, streamlined procedures, production standards as well as safe work practices.

In 2014 the company was awarded the "Golden Hephaestus" in the category "Project of the Year" of the industry contest of the Republic of Kazakhstan.

In 2016, EVRAZ Caspian Steel was awarded the special "Isker", established by the National Chamber of Entrepreneurs of Kazakhstan. It was awarded to 10 companies of the country; the plant was awarded for the production of steel products.

In 2017, EVRAZ Caspian Steel has won the regional exhibition and contest "The Best Product of Kazakhstan" and took 2nd place in the Kostanay region.

The participants of the republican "The Best Product of Kazakhstan" exhibition and contest became the laureates of the award. In the fall of 2016, EVRAZ Caspian Steel has won the regional stage for a second year in a row.

