

Special Reinforcing Bars



LIBERTY Ostrava
www.libertysteelgroup.com



MEMBER OF



LIBERTY Ostrava is an integrated steel business with an annual production capacity of approximately 3.6 million tonnes serving construction, machinery and oil & gas industries.

The company is a domestic leader in the manufacture of road barriers and tubes. In addition to the Czech market, it supplies its products to more than 40 countries around the world. Together with its subsidiaries in Ostrava, the company has 6,000 employees. The company

manufactures its products with a minimum possible environmental footprint. It is part of LIBERTY Steel Group, which is part of GFG Alliance, a collection of global businesses and investments owned by Sanjeev Gupta and his family. The Alliance is structured into three core industrial pillars: LIBERTY Steel Group, ALVANCE Aluminium Group and SIMEC Energy Group. Headquartered in London, GFG Alliance employs 35,000 people, across 10 countries and has revenues of USD \$20bn.

Liberty Ostrava Facilities

- 3 coke oven batteries
- 5 sinter belts
- 3 blast furnaces (2 operational)
- 4 tandem furnaces
- 3 continuous casting machines
- 6 rolling mills (incl. hot-strip mill, big and small Stiefel pipe mills, wire rod mill, heavy section mill, fine & medium section mill)
- Mine support and road barrier lines

Main Products

Hot rolled coils, sheets and strips, road barriers, merchant bars and sections, wire rods, tubular steels, mine supports, engineering products, transformer cores, threaded bars, rebars, hot rolled spring steel flat bars

Key Markets

Construction, machinery and automotive

Certification

ISO 9001

ISO 14001

OHSAS 18001

ISO 50001

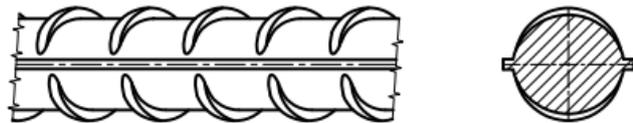


Reinforcing Steel Bars for Low Temperatures

Reinforcing steel grade B500B for low temperature are designed for the structure of steel containers for the storage of deep-cooled liquid gases with operating temperatures up to -165°C .

Special reinforcing bars are delivered in diameters **16; 20; 25; 28; 32 mm** in accordance with the standards. The lengths of the supplied bars can be supplied in the range from 3 m to 18 m with a tolerance of $-0 / + 100$ mm.

d Nomin [mm]	A [mm ²]	G [kg/m]
16	201	1.58
20	314	2.47
25	491	3.85
28	616	4.83
32	804	6.31



Specifications at Ambient Temperatures

Reinforcing bars for low temperature fulfils the EN 10080 standard

Grade Type	Steel Grade	R _{eH} (min) MPa	A _{gt} (min) [%]	A ₅ (min) [%]	R _m / R _{eh} (min)
-50					
-105	B500B	500	6	15	1.10
-165					
-620	B500B	500	5	14	1.08

Specifications at Low Temperatures

The tensile test is performed at the temperature, characterised by the type of steel. Table shows prescribed properties for the temperature of each type of grades. Bar confirm specification of EN 14620-3:2006: Design and manufacture on site of assembled vertical, cylindrical, flat-bottomed steel containers for the storage of deep-cooled, liquid gases at operating temperatures between 0°C and -165°C- Part 3: Concrete components.

Grade Type	Steel Grade	Testing Temp. [°C]	R _{eH} * (min) [MPa]	A _{gt} (min) [sample without a notch] [%]	Agt Min. [sample with a notch] [%]	NSR** Min.
-50	B500B	-50	575	3	1	>1
-105	B500B	-105	-	4	1	>1
-165	B500B	-165	-	4	1	>1
-620	B500B	-165	575	3	-	≥1

Note: * min. R_{eH} on the samples without a notch = R_{eH}(500 MPa) x 1,15

$$** \text{ Notch Sensitivity Ratio (NSR)} = \frac{R_m \text{ of sample with a notch}}{R_{eL} \text{ of sample without a notch}}$$

Service

The bars are marked with the manufacturer's symbol (dots) and the type of grade (lines).

The bars are supplied in bundles of max. weight of 5.000 kg.

Inspection certificate 3.1 according to EN 10204:2004 per heat and size with mechanical properties at room and reduced temperatures will be issued.

Contact with the mill

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