

Database of Steel and Alloy (Marochnik)

splay.kharkov.com/en

[Home](#) [European steel grades](#) [Steel and Alloy](#) [Search](#) [Equivalent grades](#) [Grading](#) [GOST Standard](#) [Contacts](#)

YOU HERE: Steel and Alloy -> Structural steel

Characteristics for grade 15kp (15кп).

Grade :	15kp (15кп)
Substitute:	10кп, 20кп
Classification :	High quality structural carbon steel
Equivalent grades:	Go here

Chemical composition in % for grade 15kp (15кп)

C	Si	Mn	Ni	S	P	Cr	Cu	As
0.12 - 0.19	max 0.07	0.25 - 0.5	max 0.3	max 0.04	max 0.035	max 0.25	max 0.3	max 0.08

Temperature of critical points for grade 15kp (15кп).

$$Ac_1 = 735, \quad Ac_3(Ac_m) = 863, \quad Ar_3(Arc_m) = 840, \quad Ar_1 = 685$$

Mechanical properties under T=20°C for grade 15kp (15кп)

Assortment	Dimension	Direct.	σ_B	σ_T	δ_5	ψ	KCU	Heat treatment
-	mm	-	MPa	MPa	%	%	kJ / m ²	-
Sheet heat-treatment, GOST 4041-71	4 - 14		320-440		30			
Pipe, GOST 10705-80			314	196	25			
Steel cold-draw n , GOST 10702-78			392		8	50		
Strip, GOST 1577-93	6 - 60		350	205	29	55		Normalizing

Brinell hardness for 15kp (15кп) , Sheet GOST 4041-71	HB 10 ⁻¹ = 121 MPa
Brinell hardness for 15kp (15кп) , Bar GOST 10702-78	HB 10 ⁻¹ = 125 MPa
Brinell hardness for 15kp (15кп) , Sheet trick GOST 1577-93	HB 10 ⁻¹ = 143 MPa

Technological properties for grade 15kp (15кп)

Weldability:	without limitations.
Flakes :	not predisposed
Temper brittleness:	not predisposed

Physical properties for grade 15kp (15кп)

--	--	--	--	--	--	--

T	E 10 ⁻⁵	α 10 ⁶	λ	ρ	C	R 10 ⁹
Grade	MPa	1/Grade	Watt/(m·Grade)	kg/m ³	J/(kg·Grade)	Ohm·m
20	2.01			7850		
100	1.92	12.4	53	7827	465	233
200	1.85	13.2	53	7794	486	296
300	1.72	13.9	49	7759	515	387
400	1.56	14.4	46	7724	532	487
500		14.8	43	7687	565	607
600		15.1	39	7648	586	753
700		15.3	36	7611	620	904
800		14.1	32	7599	691	1092
900		13.2	30	7584	708	1140
1000		13.3				
T	E 10 ⁻⁵	α 10 ⁶	λ	ρ	C	R 10 ⁹

Equivalent steels for grade 15kp (15кп)

Warning! Indicated both exact and nearest equivalents.

USA	Germany	Japan	France	England	European	Italy	Spain	China	Bulgaria	Poland	Austria	Australia
-	DIN, WNr	JIS	AFNOR	BS	EN	UNI	UNE	GB	BDS	PN	ONORM	AS
1015 1017 A366 A621 G10080 G10150 G10170 M1015 M1017	1.0332 Cq15 DD11 RSt42-2 StW22	PHD SPHD	1C DD11	1449-4HR 14HR DD11	1.0332 C15E2C DD11 StW22	FeP11	AP11 DD11	15F	15kp DD11	15X	St12F St22F	CA1 HA1

Specification :

Mechanical properties :

- σ_B - Tensile strength , [MPa]
- σ_T - Yield stress , [MPa]
- δ_5 - Specific elongation at fracture , [%]
- ψ - Reduction of area , [%]
- KCU** - Impact strength , [kJ / m²]
- HB** - Brinell hardness , [MPa]

Physical properties :

- T** - Test temperature , [Grade]
- E** - Young modulus , [MPa]
- α - Coefficient of linear expansion (range 20° - T) , [1/Grade]
- λ - Termal (heat) condition coefficient , [Watt/(m·Grade)]
- ρ - Density , [kg/m³]
- C** - Specific heat (range 20° - T) , [J/(kg·Grade)]
- R** - Electrical resistance , [Ohm·m]

Weldability :

- without limitations** - welding is done without heating and subsequent heat treating
- limited weldability** - welding is possible under heating up to 100-120 grade and subsequent heat treating
- hard weldability** - obtaining the quality welding needs the additional operations: heating up to 200-300 grade; the heat treating ia annealing

Database of steels and alloys (Marochnik) contains information about chemical composition and properties more then 2500 steels and alloys (stainless steel, alloy steel, carbone steel, structural steel, tool steel, cast iron, aluminum alloy, titanium alloy, copper alloy, nickel alloy, magnesium alloy and others).
Helpfull for specialists in grade technology, structural engineer, mechanical engineer, metallurgy and metal trader

[Top](#)

© 2003 - 2013 All rights reserved. [About program.](#)

The entire risk as to use of the Database of Steel and Alloy (Marochnik) content is assumed by you the user

