

Database of Steel and Alloy (Marochnik)

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Characteristics for grade 15K (15K).

Grade :	15K (15K)
Substitute:	20K
Classification :	High quality structural carbon steel
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Chemical composition in % for grade 15K (15K)

C	Si	Mn	Ni	S	P	Cr	Cu	As
0.12 - 0.2	0.15 - 0.3	0.35 - 0.65	max 0.3	max 0.04	max 0.04	max 0.3	max 0.3	max 0.08

Temperature of critical points for grade 15K (15K).

$A_{c1} = 724$, $A_{c3}(A_{cm}) = 860$, $A_{r3}(A_{rcm}) = 830$, $A_{r1} = 676$

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

Assortment	Dimension	Direct.	σ_B	σ_T	δ_5	ψ	KCU	Heat treatment
-	mm	-	MPa	MPa	%	%	kJ / m ²	-
Sheet, GOST 5520-79			370-480	205-225	25-27		640-690	

Technological properties for grade 15K (15K)

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

Physical properties for grade 15K (15K)

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	2.11			7870		200
100	2.08		57	7840	486	219
200	2.05	12	53	7810	498	292
300	2	12.8		7780	514	381
400	1.91	13.2	45	7740	533	487
500	1.8	13.6		7710	555	601

600	1.65	13.85	38	7670	584	758
700				7630	636	925
800					703	1094
900				7610	703	1135
1000				7550	695	1167
1100				7490	691	1194
1200					687	1219
T	$E \cdot 10^{-5}$	$\alpha \cdot 10^6$	λ	ρ	C	$R \cdot 10^9$

Equivalent steels for grade 15K (15K)

Warning! Indicated both exact and nearest equivalents.

USA	Germany	Japan	France	Italy	Sweden	Bulgaria	Hungary	Poland	Czechia	Austria
-	DIN, WNr	JIS	AFNOR	UNI	SS	BDS	MSZ	PN	CSN	ONORM
Gr.1 K02001	ASt35 H1 H2 P265GH	SGV410 STPL380	A37AP A37CP A37FP	Fe360-1KG Fe360-2KG Fe410KW	1330 1332	16K	KL2	St41K	11368 11369 11418	St35KW

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 - Thermal (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 is annealing

Database of steels and alloys (Marochnik) contains information about chemical composition and properties more than 2500 steels and alloys (stainless steel, alloy steel, carbon 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

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