

Database of Steel and Alloy (Marochnik)

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Characteristics for grade 15G (15Г).

Grade :	15G (15Г)
Substitute:	20Г
Classification :	Alloy structural steel
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Chemical composition in % for grade 15G (15Г)

C	Si	Mn	Ni	S	P	Cr	Cu
0.12 - 0.19	0.17 - 0.37	0.7 - 1	max 0.3	max 0.035	max 0.035	max 0.3	max 0.3

Temperature of critical points for grade 15G (15Г).

$A_{c1} = 735$, $A_{c3}(A_{cm}) = 863$, $A_{r3}(A_{rcm}) = 840$, $A_{r1} = 685$

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

Assortment	Dimension	Direct.	σ_B	σ_T	δ_5	ψ	KCU	Heat treatment
-	mm	-	MPa	MPa	%	%	kJ / m ²	-
Bar, GOST 4543-71	Ø 25		410	245	26	55		Normalizing 880°C, air,
Sheet trick, GOST 1577-93			420		28			Normalizing
Sheet trick, GOST 1577-93			380		29			Annealing

Brinell hardness for 15G (15Г) (cold-worked), GOST 4543-71	HB 10 ⁻¹ = 207 MPa
Brinell hardness for 15G (15Г) , Bar GOST 10702-78	HB 10 ⁻¹ = 163 MPa
Brinell hardness for 15G (15Г) , Sheet trick GOST 1577-93	HB 10 ⁻¹ = 163 MPa

Technological properties for grade 15G (15Г)

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

Physical properties for grade 15G (15Г)

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				7810		
100	1.86	12.3			496	
200	1.83					
300		13.2			538	
400						
500					592	
600		14.9				
T	E 10 ⁻⁵	α 10 ⁶	λ	ρ	C	R 10 ⁹

Equivalent steels for grade 15G (15Г)

Warning! Indicated both exact and nearest equivalents.

USA	Germany	England	European	China	Sweden	Bulgaria	Poland	Czechia
-	DIN, WNr	BS	EN	GB	SS	BDS	PN	CSN
1016 G10160	15Mn3 C14 Cm15	080M15 2S14	1.1148 C16E	15Mn H15Mn HP325	2110	14G 15G	15G 15GJ	12020

Specification :

Mechanical properties :

- σ_B - Tensile strength , [MPa]
- σ_T - Yield stress , [MPa]
- δ₅ - 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 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

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