

Database of Steel and Alloy (Marochnik)

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Characteristics for grade 50G2 (50Г2).

Grade :	50G2 (50Г2)
Substitute:	45Г2, 60Г
Classification :	Alloy structurall steel
Equivalent grades:	Go here

Chemical composition in % for grade 50G2 (50Г2)

C	Si	Mn	Ni	S	P	Cr	Cu
0.46 - 0.55	0.17 - 0.37	1.4 - 1.8	max 0.3	max 0.035	max 0.035	max 0.3	max 0.3

Temperature of critical points for grade 50G2 (50Г2).

$Ac_1 = 710$, $Ac_3(Ac_m) = 660$, $Ar_3(Arc_m) = 680$, $Ar_1 = 600$

Mechanical properties under $T=20^{\circ}C$ for grade 50G2 (50Г2)

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		740	420	11	35		Guenching and drawing
Forging	to 100		570	315	17	38	390	Normalizing
Forging	100 - 300		570	315	14	35	340	Normalizing

Brinell hardness for 50G2 (50Г2) (annealing) , GOST 4543-71

HB 10⁻¹ = 229 MPa

Technological properties for grade 50G2 (50Г2)

Weldability:	is not used.
Flakes :	weakly predisposed
Temper brittleness:	predisposed

Physical properties for grade 50G2 (50Г2)

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	2.04			7500		

100		11.3	41			
200		12.2	40			
300		12.3	38			
400			36			
500			35			
600		14.7				
T	$E \cdot 10^{-5}$	$\alpha \cdot 10^6$	λ	ρ	C	$R \cdot 10^9$

Equivalent steels for grade 50G2 (50Г2)

Warning! Indicated both exact and nearest equivalents.

USA	Germany	Spain	China	Bulgaria
-	DIN, WNr	UNE	GB	BDS
1552 G15520	50Mn7	F.120	50Mn2	50G2

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).
Helpful for specialists in grade technology, structural engineer, mechanical engineer, metallurgy and metal trader

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