

Database of Steel and Alloy (Marochnik)

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Characteristics for grade 40G2 (40Г2).

Grade :	40G2 (40Г2)
Substitute:	45Г2, 60Г
Classification :	Alloy structural steel
Equivalent grades:	Go here

Chemical composition in % for grade 40G2 (40Г2)

C	Si	Mn	Ni	S	P	Cr	Cu
0.36 - 0.44	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 40G2 (40Г2).

$A_{c1} = 713$, $A_{c3}(A_{cm}) = 780$, $A_{r3}(A_{rcm}) = 710$, $A_{r1} = 627$, $M_n = 340$

Mechanical properties under T=20°C for grade 40G2 (40Г2)

Assortment	Dimension	Direct.	σ_B	σ_T	δ_5	ψ	KCU	Heat treatment
-	mm	-	MPa	MPa	%	%	kJ / m ²	-
Bar	Ø 50	Ц	770	590	18	57	680	Guenching 820°C, water, Drawing 600°C, water,
Bar	Ø 75	Ц	730	540	18	54	590	Guenching 820°C, water, Drawing 600°C, water,
Bar	Ø 100	Ц	720	490	18	56	290	Guenching 820°C, water, Drawing 600°C, water,
Bar, GOST 4543-71	Ø 25		660	380	12	40		Guenching and drawing

Brinell hardness for 40G2 (40Г2) (annealing) , GOST 4543-71

HB 10 ⁻¹ = 217 MPa

Technological properties for grade 40G2 (40Г2)

Weldability:	hard weldability.
Flakes :	predisposed
Temper brittleness:	predisposed

Physical properties for grade 40G2 (40Г2)

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	2.12			7800		

Equivalent steels for grade 40G2 (40Г2)

Warning! Indicated both exact and nearest equivalents.

USA	Japan	China
-	JIS	GB
1141 1340 1541 1541H G11410 G13400 G15410 H13400 H15410	SMn2 SMn438 SMn438H	40Mn2

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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