

Database of Steel and Alloy (Marochnik)

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Characteristics for grade 20G (20Г).

Grade :	20G (20Г)
Substitute:	20, 30Г
Classification :	Alloy structural steel
Equivalent grades:	Go here

Chemical composition in % for grade 20G (20Г)

C	Si	Mn	Ni	S	P	Cr	Cu
0.17 - 0.24	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 20G (20Г).

$Ac_1 = 723$, $Ac_3(Ac_m) = 830$, $Ar_3(Arc_m) = 830$, $Ar_1 = 680$, $Mn = 420$

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

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		450	275	24	50		Normalizing 880°C, air,
Sheet trick, GOST 1577-93			440		27			Normalizing
Sheet trick, GOST 1577-93			400		28			Annealing

Brinell hardness for 20G (20Г) (annealing), GOST 4543-71	HB 10 ⁻¹ = 179 MPa
Brinell hardness for 20G (20Г) (normalize), Sheet trick GOST 1577-93	HB 10 ⁻¹ = 197 MPa

Technological properties for grade 20G (20Г)

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

Physical properties for grade 20G (20Г)

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			7820		

100		12.5	78			
200		13.4	67		525	
300		14.4	48			
400		15.1			554	
500						
600		15.2			689	
T	$E \cdot 10^{-5}$	$\alpha \cdot 10^6$	λ	ρ	C	$R \cdot 10^9$

Equivalent steels for grade 20G (20Г)

Warning! Indicated both exact and nearest equivalents.

USA	Germany	Japan	France	England	European	China	Bulgaria	Poland	Czechia
-	DIN, WNr	JIS	AFNOR	BS	EN	GB	BDS	PN	CSN
1021 1022 G10210 G10220 H15211	20Mn6	STB510	TU48C	080A20 90440	1.1133 20Mn5	20MnG	20G	20G 25	12022

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, 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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