

Database of Steel and Alloy (Marochnik)

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Characteristics for grade 20L (20Л).

Grade :	20L (20Л)
Substitute:	25Л, 30Л
Classification :	Non-alloy casting steel
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Chemical composition in % for grade 20L (20Л)

C	Si	Mn	S	P
0.17 - 0.25	0.2 - 0.52	0.45 - 0.9	max 0.06	max 0.06

Temperature of critical points for grade 20L (20Л).

$A_{c1} = 735$, $A_{c3}(A_{cm}) = 854$, $A_{r3}(A_{rcm}) = 835$, $A_{r1} = 680$

Mechanical properties under T=20°C for grade 20L (20Л)

Assortment	Dimension	Direct.	σ_B	σ_T	δ_5	ψ	KCU	Heat treatment
-	mm	-	MPa	MPa	%	%	kJ / m ²	-
Casting, GOST 977-88	to 100		412	216	22	35	491	Normalizing 880 - 900°C, Drawing 630 - 650°C,

Technological properties for grade 20L (20Л)

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

Technological properties of the material 20L (20Л) .

Linear shrinkage :	2.2 - 2.3 %
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Heat treatment of the material 20L (20Л)

Normalizing 880 - 900 ° C or Normalizing 880 - 900 ° C, Tempering 630 - 650 ° C

Physical properties for grade 20L (20Л)

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	2.01		54	7850		170
100	1.96	12.2	53		487	220
200	1.88	12.7	51		500	294
300	1.83	13.1	48		517	385
400	1.73	13.5	43		533	490
500	1.65	13.9	39		559	604
600	1.52	14.4	35		588	761
700	1.32	14.9	32		638	932
800	1.2	12.6	27		706	1101
900		12.4	27		706	1139
T	$E \cdot 10^{-5}$	$\alpha \cdot 10^{-6}$	λ	ρ	C	$R \cdot 10^{-9}$

Equivalent steels for grade 20L (20Л)

Warning! Indicated both exact and nearest equivalents.

USA	Germany	Japan	France	England	Italy	Poland	Czechia	Austria
-	DIN,WNr	JIS	AFNOR	BS	UNI	PN	CSN	ONORM
1A Gr.WCA J02002 J02502	1.0443 1.0619 GP240GH GS45	SC450 SCPH1	FB-M	430A	GC20	L20	422643	GS45

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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