

Database of Steel and Alloy (Marochnik)

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Characteristics for grade 50L (50Л).

Grade :	50L (50Л)
Substitute:	55Л
Classification :	Non-alloy casting steel
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Chemical composition in % for grade 50L (50Л)

C	Si	Mn	S	P
0.47 - 0.55	0.2 - 0.52	0.45 - 0.9	max 0.06	max 0.06

Mechanical properties under T=20°C for grade 50L (50Л)

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		569	334	11	20	245	Normalizing 860 - 880°C, Drawing 600 - 630°C,
Casting, GOST 977-88			736	392	14	20	294	

Brinell hardness for 50L (50Л) ,

HB 10⁻¹ = 159 - 240 MPa

Technological properties for grade 50L (50Л)

Weldability:	limited weldability.
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Heat treatment of the material 50L (50Л)

Normalizing 860 - 880 ° C, Tempering 600 - 630 ° C
Hardening 860 - 880 ° C, Tempering 600 - 630 ° C

Physical properties for grade 50L (50Л)

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	2.19		48	7820		191
100	2.14	12	48		479	240
200	2.08	12.4	46		500	321

300	1.96	12.8	44		517	407
400	1.78	13.3	41		542	509
500	1.7	13.7	38		559	631
600	1.55	14.1	34		584	779
700	1.36	14.5	30		617	941
800	1.22	12.4	25		727	1139
900		13.3	26		710	1170
T	$E \cdot 10^{-5}$	$\alpha \cdot 10^6$	λ	ρ	C	$R \cdot 10^9$

Equivalent steels for grade 50L (50Л)

Warning! Indicated both exact and nearest equivalents.

USA	Germany	Japan
-	DIN,WNr	JIS
A732(4A)	GS-60	SCC5

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 - Termal (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 treeting
limited weldability - welding is possible under heating up to 100-120 grade and subsequent heat treeting
hard weldability - obtaining the quality welding needs the additional operations: heating up to 200-300 grade; the heat treeting 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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