

Database of Steel and Alloy (Marochnik)

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Characteristics for grade 15L (15Л).

Grade :	15L (15Л)
Substitute:	20Л
Classification :	Non-alloy casting steel
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Chemical composition in % for grade 15L (15Л)

C	Si	Mn	S	P
0.12 - 0.2	0.2 - 0.52	0.45 - 0.9	max 0.06	max 0.06

Temperature of critical points for grade 15L (15Л).

$Ac_1 = 735$, $Ac_3(Ac_m) = 863$, $Ar_3(Arc_m) = 840$, $Ar_1 = 685$

Mechanical properties under T=20°C for grade 15L (15Л)

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		392	196	24	35	491	Normalizing 910 - 930°C, Drawing 670 - 690°C,

Brinell hardness for 15L (15Л) ,

HB 10⁻¹ = 109 - 136 MPa

Technological properties for grade 15L (15Л)

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

Technological properties of the material 15L (15Л) .

Linear shrinkage :

2.2 - 2.3 %

Heat treatment of the material 15L (15Л)

Normalizing 910 - 930 ° C or Normalizing 910 - 930 ° C, Tempering 670 - 690 ° C

Physical properties for grade 15L (15Л)

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				7820		
100		11.9	78		470	

200		12.5	67		479	
300						
400		13.6	48		517	
500		14.2	41			
600					571	
T	$E 10^{-5}$	$\alpha 10^6$	λ	ρ	C	$R 10^9$

Equivalent steels for grade 15L (15Л)

Warning! Indicated both exact and nearest equivalents.

USA	Germany	Japan	France	England	European	Italy	China	Sweden	Bulgaria	Hungary	Poland	Romania	Czechia	Inter	Taiwan
-	DIN, WNr	JIS	AFNOR	BS	EN	UNI	GB	SS	BDS	MSZ	PN	STAS	CSN	ISO	-
J01700	1.0416 1.0420 1.1142 GS-38 GS- CK16	SC360	E20- 40M	AM1 AW1 CLA9	1.0416 C18D	FeG42	ZG200- 400	1035	15LI 15LII	Ao400 Ao400FK	L400 LII400	OT400-1 OT400-3	422630	200- 400	SC(37)C

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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