

Database of Steel and Alloy (Marochnik)

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Characteristics for grade 40L (40Л).

Grade :	40L (40Л)
Substitute:	45Л
Classification :	Non-alloy casting steel
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Chemical composition in % for grade 40L (40Л)

C	Si	Mn	S	P
0.37 - 0.45	0.2 - 0.52	0.45 - 0.9	max 0.06	max 0.06

Temperature of critical points for grade 40L (40Л).

$A_{c1} = 726$, $A_{c3}(A_{cm}) = 790$, $A_{r3}(A_{rcm}) = 728$, $A_{r1} = 689$

Mechanical properties under T=20°C for grade 40L (40Л)

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		520	294	14	25	294	Normalizing 860 - 880°C, Drawing 600 - 630°C,
Casting, GOST 977-88			540	343	14	20	294	

Brinell hardness for 40L (40Л) ,

HB 10 ⁻¹ = 146 - 173 MPa

Technological properties for grade 40L (40Л)

Weldability:	limited weldability.
Flakes :	not predisposed
Temper brittleness:	not predisposed

Technological properties of the material 40L (40Л) .

Linear shrinkage :	2.2 - 2.3 %
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Heat treatment of the material 40L (40Л)

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

Physical properties for grade 40L (40Л)

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				7810		
100		12.4	60		470	
200		12.6	53		483	
300						
400		14.5	47		525	
500			41			
600		14.6			571	
T	E 10 ⁻⁵	α 10 ⁶	λ	ρ	C	R 10 ⁹

Equivalent steels for grade 40L (40Л)

Warning! Indicated both exact and nearest equivalents.

USA	Japan	England	Bulgaria	Romania	Finland
-	JIS	BS	BDS	STAS	SFS
3A J04002	SCC3	CLA1gradeC CLA8gradeC	35LI 40LI	OT550-1	G-30-57

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

(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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