

Database of Steel and Alloy (Marochnik)

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Characteristics for grade 10ps (10nc).

Grade :	10ps (10nc)
Substitute:	08кп, 15кп, 10
Classification :	High quality structural carbon steel
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Chemical composition in % for grade 10ps (10nc)

C	Si	Mn	Ni	S	P	Cr	Cu	As
0.07 - 0.14	0.05 - 0.17	0.35 - 0.65	max 0.3	max 0.04	max 0.035	max 0.15	max 0.3	max 0.08

Temperature of critical points for grade 10ps (10nc).

$Ac_1 = 732$, $Ac_3(Ac_m) = 870$, $Ar_3(Arc_m) = 854$, $Ar_1 = 680$

Mechanical properties under T=20°C for grade 10ps (10nc)

Assortment	Dimension	Direct.	σ_B	σ_T	δ_5	ψ	KCU	Heat treatment
-	mm	-	MPa	MPa	%	%	kJ / m ²	-
Sheet heat-treatment, GOST 4041-71	4 - 14		290-420		32			
Bar cold-drawn, GOST 10702-78			310-410			50		Annealing
Strip, GOST 1577-93	6 - 60		310	185	33	55		Normalizing

Brinell hardness for 10ps (10nc) , Sheet GOST 4041-71	HB 10 ⁻¹ = 117 MPa
Brinell hardness for 10ps (10nc) , Bar GOST 10702-78	HB 10 ⁻¹ = 115 MPa
Brinell hardness for 10ps (10nc) (annealing) , Sheet GOST 1577-93	HB 10 ⁻¹ = 137 MPa

Technological properties for grade 10ps (10nc)

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

Physical properties for grade 10ps (10nc)

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	1.86					
100		12.4	58	7832		190
200		13.2	54	7800		263
300		13.9	49	7765		352
400		14.5	45	7730		458
500		14.9	40	7692		584
600		15.1	36	7653		734
700		15.3	32	7613		905
800			29	7582		1081
900			27	7594		1130
T	$E \cdot 10^{-5}$	$\alpha \cdot 10^6$	λ	ρ	C	$R \cdot 10^9$

Equivalent steels for grade 10ps (10nc)

Warning! Indicated both exact and nearest equivalents.

USA	Bulgaria	Poland	Czechia
-	BDS	PN	CSN
1010 1110 G10100 G10120	10ps	10Y	12021

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

(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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