

Database of Steel and Alloy (Marochnik)

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Characteristics for grade U7A (Y7A).

Grade :	U7A (Y7A)
Substitute:	Y8
Classification :	Carbon tool steel
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Chemical composition in % for grade U7A (Y7A)

C	Si	Mn	Ni	S	P	Cr	Cu
0.65 - 0.74	0.17 - 0.33	0.17 - 0.28	max 0.25	max 0.018	max 0.025	max 0.2	max 0.25

Temperature of critical points for grade U7A (Y7A).

$Ac_1 = 730$, $Ac_3(Ac_m) = 770$, $Ar_1 = 700$, $Mn = 280$

Mechanical properties under T=20°C for grade U7A (Y7A)

Assortment	Dimension	Direct.	σ_B	σ_T	δ_5	ψ	KCU	Heat treatment
-	mm	-	MPa	MPa	%	%	kJ / m ²	-
Band cold-worked , GOST 2283-79			740-1180					
Band annealed , GOST 2283-79			640-740		10-15			

Brinell hardness for U7A (Y7A) (annealing) , GOST 1435-99	HB 10 ⁻¹ = 187 MPa
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Technological properties for grade U7A (Y7A)

Weldability:	is not used.
Flakes :	not predisposed
Temper brittleness:	not predisposed

Physical properties for grade U7A (Y7A)

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				7830		130

Equivalent steels for grade U7A (Y7A)

Warning! Indicated both exact and nearest equivalents.

Germany	France	European	Italy	China	Bulgaria	Hungary	Poland	Romania	Czechia
DIN, WNr	AFNOR	EN	UNI	GB	BDS	MSZ	PN	STAS	CSN
1.1520 C70U C70W1	C70E2U XC65	CT70	C70KU	T7A	C70U U7A	S71 S72	N7E	OSC7	19132

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 in 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).
 Helpfull for specialists in grade technology, structural engineer, mechanical engineer, metallurgy and metal trader

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