

Database of Steel and Alloy (Marochnik)

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Characteristics for grade U7 (Y7).

Grade :	U7 (Y7)
Substitute:	Y8
Classification :	Carbon tool steel
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Chemical composition in % for grade U7 (Y7)

C	Si	Mn	Ni	S	P	Cr	Cu
0.65 - 0.74	0.17 - 0.33	0.17 - 0.33	max 0.25	max 0.028	max 0.03	max 0.2	max 0.25

Temperature of critical points for grade U7 (Y7).

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

Mechanical properties under T=20°C for grade U7 (Y7)

Assortment	Dimension	Direct.	σ_B	σ_T	δ_5	ψ	KCU	Heat treatment
-	mm	-	MPa	MPa	%	%	kJ / m ²	-
Band cold-rolled	to 1		650		15			As-delivered state

Brinell hardness for U7 (Y7) (annealing), GOST 1435-99	HB 10 ⁻¹ = 187 MPa
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Technological properties for grade U7 (Y7)

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

Physical properties for grade U7 (Y7)

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			46	7830		130
100			46			
200						
300			41		580	

400					664	
500					819	
600			33		970	
700					710	
800					706	
900			29		685	
T	$E \cdot 10^{-5}$	$\alpha \cdot 10^6$	λ	ρ	C	$R \cdot 10^9$

Equivalent steels for grade U7 (Y7)

Warning! Indicated both exact and nearest equivalents.

Germany	Japan	France	European	Italy	China	Bulgaria	Hungary	Poland	Romania	Czechia	Austria
DIN, WNr	JIS	AFNOR	EN	UNI	GB	BDS	MSZ	PN	STAS	CSN	ONORM
1.1620 C70W C70W2	SK6 SK7	C70E2U XC65 Y1-70 Y170	CT70	C70KU	T7	U7	S71 S72	N7	OSC7	19132 19133	K970

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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