

Database of Steel and Alloy (Marochnik)

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Characteristics for grade U10 (Y10).

Grade :	U10 (Y10)
Substitute:	Y11, Y12
Classification :	Carbon tool steel
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Chemical composition in % for grade U10 (Y10)

C	Si	Mn	Ni	S	P	Cr	Cu
0.95 - 1.09	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 U10 (Y10).

Ac ₁ = 730 , Ac ₃ (Ac _m) = 800 , Ar ₁ = 700 , Mn = 210
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Mechanical properties under T=20°C for grade U10 (Y10)

Assortment	Dimension	Direct.	σ _B	σ _T	δ ₅	ψ	KCU	Heat treatment
-	mm	-	MPa	MPa	%	%	kJ / m ²	-
Band cold-rolled	to 4		750		10			As-delivered state

Brinell hardness for U10 (Y10) (annealing), GOST 1435-99	HB 10 ⁻¹ = 197 MPa
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Technological properties for grade U10 (Y10)

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

Physical properties for grade U10 (Y10)

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			40	7810		420
100		11.5	44			
200		11.9				
300		12.5	41			
400		13				
500		13.4				
600		13.9	38			
700		14.3				
800		13.9				
900		15.4	34			
1000		13.3				
T	E 10 ⁻⁵	α 10 ⁶	λ	ρ	C	R 10 ⁹

Equivalent steels for grade U10 (Y10)

Warning! Indicated both exact and nearest equivalents.

USA	Germany	Japan	France	England	European	Italy	Spain	China	Sweden	Bulgaria	Hungary	Poland	Romania	Czechia	Austria	South Korea
-	DIN,WNr	JIS	AFNOR	BS	EN	UNI	UNE	GB	SS	BDS	MSZ	PN	STAS	CSN	ONORM	KS
G51320 T72301 W1-9	1.1645 C105W1 C105W2	SK3 SK4	C105E2U C120E3U Y1-90	1645 BW1A BW1B	CT105	C100KU	C102	T10 T11	1880	U10 U11 U12	S101 S102	N10 N10E N11 N11E	OSC10	19192	BOHLERK990 K990	STC3

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 ia annealing

Database of steels and alloys (Marochnik) contains information about chemical composition and properties more then 2500 steels and alloys (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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