

Database of Steel and Alloy (Marochnik)

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Characteristics for grade U8 (Y8).

Grade :	U8 (Y8)
Substitute:	Y7, Y10
Classification :	Carbon tool steel
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Chemical composition in % for grade U8 (Y8)

C	Si	Mn	Ni	S	P	Cr	Cu
0.75 - 0.84	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 U8 (Y8).

$Ac_1 = 720$, $Ar_1 = 700$, $Mn = 245$

Mechanical properties under T=20°C for grade U8 (Y8)

Assortment	Dimension	Direct.	σ_B	σ_T	δ_5	ψ	KCU	Heat treatment
-	mm	-	MPa	MPa	%	%	kJ / m ²	-
Blank	6		1420	1230	10	37		Guenching 780°C, oil, Drawing 400°C,
Band annealed	1.5		750		10			

Brinell hardness for U8 (Y8) (annealing), GOST 1435-99

HB 10⁻¹ = 187 MPa

Technological properties for grade U8 (Y8)

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

Physical properties for grade U8 (Y8)

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	2.09			7839		
100	2.05	11.4	49	7817	477	230

200	1.99	12.2	46	7786	511	305
300	1.92	13	42	7752	528	395
400	1.85	13.7	38	7714	548	491
500	1.75	14.3	35	7676	565	625
600	1.66	14.8	33	7638	594	769
700		15.2	30	7600	624	931
800		14.5	24	7852	724	1129
900						1165
T	$E \cdot 10^{-5}$	$\alpha \cdot 10^6$	λ	ρ	C	$R \cdot 10^9$

Equivalent steels for grade U8 (Y8)

Warning! Indicated both exact and nearest equivalents.

USA	Germany	Japan	France	England	European	Italy	China	Poland	Czechia	Austria
-	DIN, WNr	JIS	AFNOR	BS	EN	UNI	GB	PN	CSN	ONORM
W1-7	1.1625 C80W1 C80W2	SK5 SK6 SKC3	C90E2U Y1-70 Y1-80 Y180 Y90	BW1A BW1B	CT80	C80KU	T8	N8	19152	K980

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

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