

Database of Steel and Alloy (Marochnik)

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Characteristics for grade U12A (Y12A).

Grade :	U12A (Y12A)
Classification :	Carbon tool steel
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Chemical composition in % for grade U12A (Y12A)

C	Si	Mn	Ni	S	P	Cr	Cu
1.1 - 1.29	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 U12A (Y12A).

$Ac_1 = 730$, $Ac_3(Ac_m) = 820$, $Ar_1 = 700$, $Mn = 200$

Mechanical properties under T=20°C for grade U12A (Y12A)

Assortment	Dimension	Direct.	σ_B	σ_T	δ_5	ψ	KCU	Heat treatment
-	mm	-	MPa	MPa	%	%	kJ / m ²	-
Band annealed	0.08 - 3		750		10			

Brinell hardness for U12A (Y12A) (annealing), GOST 1435-99	HB 10 ⁻¹ = 217 MPa
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Physical properties for grade U12A (Y12A)

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				7810		

Equivalent steels for grade U12A (Y12A)

Warning! Indicated both exact and nearest equivalents.

Japan	France	England	Italy	Bulgaria	Hungary	Poland	Czechia
JIS	AFNOR	BS	UNI	BDS	MSZ	PN	CSN
SK2	C120E3U	BW1C	C120KU	U12A	S121 S122	N12E	19221

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 / m ²]
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/m ³]
C	- Specific heat (range 20° - T) , [J/(kg·Grade)]
R	- Electrical resistance , [Ohm·m]

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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