

Database of Steel and Alloy (Marochnik)

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Characteristics for grade U13 (Y13).

Grade :	U13 (Y13)
Classification :	Carbon tool steel
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Chemical composition in % for grade U13 (Y13)

C	Si	Mn	Ni	S	P	Cr	Cu
1.26 - 1.34	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 U13 (Y13).

$Ac_1 = 730$, $Ac_3(Ac_m) = 830$, $Ar_1 = 700$, $Mn = 190$

Mechanical properties under T=20°C for grade U13 (Y13)

Assortment	Dimension	Direct.	σ_B	σ_T	δ_5	ψ	KCU	Heat treatment
-	mm	-	MPa	MPa	%	%	kJ / m ²	-
Band annealed	0.08 - 3		900					

Brinell hardness for U13 (Y13) (annealing) ,	HB 10 ⁻¹ = 217 MPa
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Physical properties for grade U13 (Y13)

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				7800		

Equivalent steels for grade U13 (Y13)

Warning! Indicated both exact and nearest equivalents.

USA	Germany	Japan	France	European	Italy	Spain	Bulgaria	Hungary	Poland	Czechia	Austria
-	DIN,WNr	JIS	AFNOR	EN	UNI	UNE	BDS	MSZ	PN	CSN	ONORM
T72301 W1-13 W112	1.1663 C125U C125W	SK1 SK2	C120E3U C140E3U Y240	CT120	C120KU C140KU	C120 F.5123	U13	S131 S132	N12 N13	19255	K995

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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