

Database of Steel and Alloy (Marochnik)

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[Home](#) [European steel grades](#) [Steel and Alloy](#) [Search](#) [Equivalent grades](#) [Grading](#) [GOST Standard](#) [Contacts](#)

YOU HERE: [Steel and Alloy](#) -> [High-temperature or heat-resistant steel and alloy](#)

Characteristics for grade 20KH23N13 (20X23H13).

Grade :	20KH23N13 (20X23H13) (X23H13 ЭИ319)
Classification :	High alloy high-temperature steel
Equivalent grades:	Go here

Chemical composition in % for grade 20KH23N13 (20X23H13)

C	Si	Mn	Ni	S	P	Cr	Ti	Cu
max 0.2	max 1	max 2	12 - 15	max 0.025	max 0.035	22 - 25	max 0.2	max 0.3

Mechanical properties under T=20°C for grade 20KH23N13 (20X23H13)

Assortment	Dimension	Direct.	σ_B	σ_T	δ_5	ψ	KCU	Heat treatment
-	mm	-	MPa	MPa	%	%	kJ / m ²	-
Bar, GOST 5949-75	Ø 60		490	295	35	50		Guenching 1100 - 1150°C, air,
Sheet thick, GOST 7350-77			570		35			Guenching
Sheet thin, GOST 5582-75			540		35			Guenching 1100 - 1150°C, Cooling air,

Technological properties for grade 20KH23N13 (20X23H13)

Weldability:	limited weldability.
Temper brittleness:	predisposed

Physical properties for grade 20KH23N13 (20X23H13)

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	2.07			7820		
100		14.9		7790	538	
200		15.7	17			
300		16.6	19			
400		17.1	21			
500		17.5	23			
600		17.8	24	7580		
700		18.2	27			
800			29	7480		
900			31			
T	E 10 ⁻⁵	α 10 ⁶	λ	ρ	C	R 10 ⁹

Equivalent steels for grade 20KH23N13 (20X23H13)

Warning! Indicated both exact and nearest equivalents.

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USA	Germany	Japan	France	England	European	Italy	Spain	China	Poland	Korea
-	DIN,WNr	JIS	AFNOR	BS	EN	UNI	UNE	GB	PN	KS
309 MT309 MT309S S30900 S30908	X12CrNi23-13 X7CrNi23-14 X9CrNiSiNCE21-11-2	SUH309 SUS309 SUS309S SUS309STB	Z15CN24-13	309S 309S16 309S24 X12CrNi23-13	1.4833 X12CrNi23-13	X16CrNi23-14	X12CrNi23-13	0Cr23Ni13	H23N13	STS309S

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

[Top](#)

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