

Database of Steel and Alloy (Marochnik)

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Characteristics for grade 08KH13 (08X13).

Grade :	08KH13 (08X13) (0X13 ЭИ496)
Substitute:	12X13, 12X18H9T
Classification :	Corrosion-resistant high-temperature steel
Equivalent grades:	Go here

Chemical composition in % for grade 08KH13 (08X13)

C	Si	Mn	Ni	S	P	Cr
max 0.08	max 0.8	max 0.8	max 0.6	max 0.025	max 0.03	12 - 14

Mechanical properties under T=20°C for grade 08KH13 (08X13)

Assortment	Dimension	Direct.	σ_B	σ_T	δ_5	ψ	KCU	Heat treatment
-	mm	-	MPa	MPa	%	%	kJ / m ²	-
Pipe cooling strain, GOST 9941-81			372		22			
Pipe hot strain, GOST 9940-81			372		22			
Bar, GOST 5949-75			590	410	20	60	980	Guenching 1000 - 1050°C, oil, Drawing 700 - 800°C, oil,
Bar, GOST 18968-73			580	410	20	60	980	Normalizing and drawing
Forging, GOST 25054-81	to 600	longitudinal	539	392	14-17	35-50	490-830	Guenching and drawing
Sheet thick, GOST 7350-77			420	295	23			Guenching 960 - 1020°C, water, Drawing 680 - 780°C, air,
Sheet thick, GOST 7350-77			650	250	15			Annealing
Sheet thin, GOST 5582-75			410		21			Annealing

Brinell hardness for 08KH13 (08X13) (quenching, tempering), GOST 25054-81	HB 10 ⁻¹ = 187 - 229 MPa
Brinell hardness for 08KH13 (08X13) (annealing), Bar GOST 5949-75	HB 10 ⁻¹ = 116 - 179 MPa
Brinell hardness for 08KH13 (08X13) (normalize, tempering), Bar GOST 18968-73	HB 10 ⁻¹ = 187 - 217 MPa

Technological properties for grade 08KH13 (08X13)

Weldability:	limited weldability.
Temper brittleness:	predisposed

Physical properties for grade 08KH13 (08X13)

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	2.17			7760		506
100	2.12	10.5	28	7740	462	584
200	2.06	11.1	28	7710		679
300	1.98	11.4	28			769
400	1.89	11.8	28			854
500	1.8	12.1	27			938
600		12.3	26			1021
700		12.5	26			1103
800		12.8	25			
T	$E \cdot 10^{-5}$	$\alpha \cdot 10^6$	λ	ρ	C	$R \cdot 10^9$

Equivalent steels for grade 08KH13 (08X13)

Warning! Indicated both exact and nearest equivalents.

USA	Germany	Japan	France	England	European	Italy	Spain	China	Sweden	Poland	Czechia
-	DIN, WNr	JIS	AFNOR	BS	EN	UNI	UNE	GB	SS	PN	CSN
403	1.4000	SUS403	410F90	403S17	1.400	X6CM3	F.3110	OCr13	2301	OH13	17020
410S	1.4001	SUS410	Z6C13		X6Cr13	X6Cr13	X6CM3				
410S	X6CM3	SUS410S	Z8C113FF				X6Cr13				
429	X6Cr13	SUS429	Z8C12								
S40500	X7CM4		Z8C13FF								
	X7Cr13										
	X7Cr14										

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

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