

Database of Steel and Alloy (Marochnik)

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Characteristics for grade 12KH17 (12X17).

Grade :	12KH17 (12X17) (X17)
Substitute:	12X18H9
Classification :	Corrosion-resistant high-temperature steel
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Chemical composition in % for grade 12KH17 (12X17)

C	Si	Mn	S	P	Cr
max 0.12	max 0.8	max 0.8	max 0.025	max 0.035	16 - 18

Mechanical properties under T=20°C for grade 12KH17 (12X17)

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			441		17			
Pipe hot strain, GOST 9940-81			441		17			
Bar, GOST 5949-75		longitudinal	390	245	20	50		Annealing 760 - 780°C, air,
Sheet trick, GOST 7350-77			440		18			Annealing
Sheet thin, GOST 5582-75			490		20			Annealing 740 - 780°C,

Brinell hardness for 12KH17 (12X17) (annealing), Bar GOST 5949-75	HB 10 ⁻¹ = 126 - 197 MPa
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Technological properties for grade 12KH17 (12X17)

Weldability:	hard weldability.
Temper brittleness:	predisposed

Physical properties for grade 12KH17 (12X17)

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	2.32			7720		560
100	2.27	10.4	24		462	610
200	2.19	10.5	24			680
300	2.11	10.8	25			770
400	2.01	11.2	26			850
500	1.92	11.4	26			950
600	1.82	11.6				1030
700	1.65	11.9				1110

800	1.48	12.1				1150
900						1160
T	$E \cdot 10^{-5}$	$\alpha \cdot 10^6$	λ	ρ	C	$R \cdot 10^9$

Equivalent steels for grade 12KH17 (12X17)

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
430 S43000	1.4016 X6Cr17 X6Cr17 X8Cr17	SUS430 SUS430TB SUS430TK	430F00 Z8C17	17Cr 430S15 430S17 430S18	1.4016 X6Cr17 X8Cr17	X6Cr17 X8Cr17	F.3113 X6Cr17	1Cr15 1Cr17 ML1Cr17	2320	H17	17040 17041

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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