

Database of Steel and Alloy (Marochnik)

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Characteristics for grade 12KH18N10T (12X18H10T).

Grade :	12KH18N10T (12X18H10T) (X18H10T)
Substitute:	08X18Г8H2T, 10X14Г14H4T, 12X17Г9AH4, 08X22H6T, 08X17T, 15X25T, 12X18H9T
Classification :	Cryogenic structural steel
Equivalent grades:	Go here

Chemical composition in % for grade 12KH18N10T (12X18H10T)

C	Si	Mn	Ni	S	P	Cr	Cu	-
max 0.12	max 0.8	max 2	9 - 11	max 0.02	max 0.035	17 - 19	max 0.3	(5 C - 0.8) Ti, остальное Fe

Mechanical properties under T=20°C for grade 12KH18N10T (12X18H10T)

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			549		35			
Pipe hot strain, GOST 9940-81			529		40			
Bar, GOST 5949-75	to Ø 60		510	196	40	55		Guenching 1020 - 1100°C, Cooling air,
Wire, GOST 18143-72			540-830		20-25			
Forging, GOST 25054-81	to 1000		510	196	35-38	40-52		Guenching 1050 - 1100°C, water,
Sheet trick, GOST 7350-77			530	235	38			Guenching 1000 - 1080°C, Cooling water,
Sheet thin, GOST 5582-75			530	205	40			Guenching 1050 - 1080°C, Cooling water,
Sheet thin cold-worked, GOST 5582-75			880-1080		10			
Sheet thin, GOST 5582-75			740		25			

Brinell hardness for 12KH18N10T (12X18H10T), Forging GOST 25054-81

HB 10⁻¹ = 179 MPa

Technological properties for grade 12KH18N10T (12X18H10T)

Weldability:	without limitations.
Flakes :	not predisposed

Physical properties for grade 12KH18N10T (12X18H10T)

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	1.98		15	7920		725
100	1.94	16.6	16		462	792
200	1.89	17	18		496	861
300	1.81	17.2	19		517	920
400	1.74	17.5	21		538	976
500	1.66	17.9	23		550	1028
600	1.57	18.2	25		563	1075
700	1.47	18.6	27		575	1115
800		18.9	26		596	
900		19.3				
T	E 10 ⁻⁵	α 10 ⁶	λ	ρ	C	R 10 ⁹

Equivalent steels for grade 12KH18N10T (12X18H10T)

Warning! Indicated both exact and nearest equivalents.

USA	Germany	Japan	France	England	European	Italy	Spain	China	Sweden	Bulgaria	Hungary	Poland	Romania	Czechia	Austria
-	DIN,WNr	JIS	AFNOR	BS	EN	UNI	UNE	GB	SS	BDS	MSZ	PN	STAS	CSN	ONORM
321 321H S32100 S32109	1.4541 1.4878 X10CrNiTi18-10 X12CrNiTi18-9 X6CrNiTi18-10	SUS321	Z10CNT18-10 Z10CNT18-11 Z6CNT18-10 Z6CNT18-12	321S31 321S51 321S59 LW18 LW24 X6CrNiTi18-10	1.4541 1.4878 X10CrNiTi18-10 X6CrNiTi18-10KT	X6CrNiTi18-11 X6CrNiTi18-11KG X6CrNiTi18-11KT	F.3523 X6CrNiTi18-10	0Cr18Ni10Ti 0Cr18Ni11Ti 0Cr18Ni9Ti 1Cr18Ni11Ti H0Cr20Ni10Ti	2337	0Ch18N10T Ch18N12T Ch18N9T X6CrNiTi18-10	H5Ti KO36Ti KO37Ti X6CrNiTi18-10	0H18N10T 1H18N10T 1H18N12T 1H18N9T	10TiNiCr180 12TiNiCr180	17246 17247 17248	X6CrNiTi18-10KKW X6CrNiTi18-10S

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 ia annealing

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).
 Helpful for specialists in grade technology, structural engineer, mechanical engineer, metallurgy and metal trader

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