

Database of Steel and Alloy (Marochnik)

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Characteristics for grade KHN78T (XH78T).

Grade :	KHN78T (XH78T) (ЭИ435)
Substitute:	XH38BT, 12X25H16Г7AP, 20X23H18
Classification :	High-temperature or heat-resistant alloy
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Chemical composition in % for grade KHN78T (XH78T)

Fe	C	Si	Mn	Ni	S	P	Cr	Ti
max 6	max 0.12	max 0.8	max 0.7	70.003 - 80.85	max 0.012	max 0.015	19 - 22	0.15 - 0.35

Mechanical properties under T=20°C for grade KHN78T (XH78T)

Assortment	Dimension	Direct.	σ_B	σ_T	δ_5	ψ	KCU	Heat treatment
-	mm	-	MPa	MPa	%	%	kJ / m ²	-
Sheet, GOST 24982-81	to 3.9		860		35			Guenching 980 - 1020°C, Cooling air,
Sheet, GOST 24982-81	4 - 11		880		30			Guenching 980 - 1020°C, Cooling air,
Forging, GOST 25054-81	to 600	longitudinal	588	196	25-30	35-40		Guenching

Brinell hardness for KHN78T (XH78T) (quenching), GOST 25054-81

HB 10⁻¹ = 200 MPa

Technological properties for grade KHN78T (XH78T)

Weldability:	hard weldability.
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Physical properties for grade KHN78T (XH78T)

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	2.24			8400		1090
100	2.19	12.2	14.6	8380		1099
200	2.13	13	16.7	8340		1108
300	2.06	13.4	18.5	8310		1117
400	2	13.8	20.6	8260		1127
500	1.93	14.1	22.7	8220		1153
600	1.84	14.7	24.8	8180		1135
700		15.4	26.8	8130		1126
800		15.5	28.9	8090		1123
900				8040		
T	E 10 ⁻⁵	α 10 ⁶	λ	ρ	C	R 10 ⁹

Equivalent steels for grade KHN78T (XH78T)

Warning! Indicated both exact and nearest equivalents.

USA	Germany	China
-	DIN, WNr	GB
N06025	2.4951 NiCr20Ti	GH3030

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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