

Database of Steel and Alloy (Marochnik)

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Characteristics for grade 50KHN (50XH).

Grade :	50KHN (50XH)
Substitute:	40XH, 60XГ
Classification :	Alloy structural steel
Equivalent grades:	Is absent

Chemical composition in % for grade 50KHN (50XH)

C	Si	Mn	Ni	S	P	Cr	Cu
0.46 - 0.54	0.17 - 0.37	0.5 - 0.8	1 - 1.4	max 0.035	max 0.035	0.45 - 0.75	max 0.3

Temperature of critical points for grade 50KHN (50XH).

$Ac_1 = 735$, $Ac_3(Ac_m) = 755$, $Ar_3(Arc_m) = 690$, $Ar_1 = 660$, $Mn = 300$

Mechanical properties under T=20°C for grade 50KHN (50XH)

Assortment	Dimension	Direct.	σ_B	σ_T	δ_5	ψ	KCU	Heat treatment
-	mm	-	MPa	MPa	%	%	kJ / m ²	-
Bar, GOST 4543-71	Ø 25		1080	885	9	40	490	Guenching 820°C, water, Drawing 530°C, water,

Brinell hardness for 50KHN (50XH) (annealing) , GOST 4543-71	HB 10 ⁻¹ = 207 MPa
Brinell hardness for 50KHN (50XH) , Bar GOST 10702-78	HB 10 ⁻¹ = 197 MPa

Technological properties for grade 50KHN (50XH)

Weldability:	is not used.
Flakes :	predisposed
Temper brittleness:	predisposed

Physical properties for grade 50KHN (50XH)

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				7860		

100		11.8	43		500	
200			40		510	
300		12.3	39		560	
400		13.4	38		630	
500		14	37		700	
600			36		800	
700			32		910	
800			23		650	
900			24		610	
1000					700	
T	$E \cdot 10^{-5}$	$\alpha \cdot 10^6$	λ	ρ	C	$R \cdot 10^9$

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

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