

Database of Steel and Alloy (Marochnik)

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Characteristics for grade 40KHN (40XH).

Grade :	40KHN (40XH)
Substitute:	45XH, 50XH, 38XГН, 40X, 35XГФ, 40XHP, 40XHM, 30XГБТ
Classification :	Alloy structural steel
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Chemical composition in % for grade 40KHN (40XH)

C	Si	Mn	Ni	S	P	Cr	Cu
0.36 - 0.44	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 40KHN (40XH).

$A_{c1} = 735$, $A_{c3}(A_{cm}) = 768$, $A_{r3}(A_{rcm}) = 700$, $A_{r1} = 660$, $M_n = 305$

Mechanical properties under T=20°C for grade 40KHN (40XH)

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		980	785	11	45	690	Guenching and drawing

Brinell hardness for 40KHN (40XH) (annealing), GOST 4543-71	HB 10 ⁻¹ = 207 MPa
Brinell hardness for 40KHN (40XH) , Bar GOST 10702-78	HB 10 ⁻¹ = 179 MPa

Technological properties for grade 40KHN (40XH)

Weldability:	hard weldability.
Flakes :	predisposed
Temper brittleness:	predisposed

Physical properties for grade 40KHN (40XH)

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			7820		
100		11.8	44	7800		

200		12.3	43	7770		
300		13.4	41	7740		
400		14	39	7700		
500			37			
T	$E \cdot 10^{-5}$	$\alpha \cdot 10^6$	λ	ρ	C	$R \cdot 10^9$

Equivalent steels for grade 40 KHN (40XH)

Warning! Indicated both exact and nearest equivalents.

USA	Germany	Japan	France	England	China	Sweden	Bulgaria	Romania	Czechia	Australia
-	DIN, WNr	JIS	AFNOR	BS	GB	SS	BDS	STAS	CSN	AS
3135 3140H G31400	1.5710 1.5711 36NiCr6 40NiCr6	SNC236	35NC6	640M40	40CrNi	2530	40ChN	40CrNi12 40CrNi12q	16240	3140 3140H

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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