

Database of Steel and Alloy (Marochnik)

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Characteristics for grade 40KHN2MA (40XH2MA).

Grade :	40KHN2MA (40XH2MA) (40XHMA)
Substitute:	40XГТ, 40XГР, 30X3МФ, 45XH2МФА
Classification :	Alloy structural steel
Equivalent grades:	Go here

Chemical composition in % for grade 40KHN2MA (40XH2MA)

C	Si	Mn	Ni	S	P	Cr	Mo	Cu
0.37 - 0.44	0.17 - 0.37	0.5 - 0.8	1.25 - 1.65	max 0.025	max 0.025	0.6 - 0.9	0.15 - 0.25	max 0.3

Temperature of critical points for grade 40KHN2MA (40XH2MA).

$Ac_1 = 730$, $Ac_3(Ac_m) = 820$, $Ar_3(Arc_m) = 550$, $Ar_1 = 380$, $Mn = 320$

Mechanical properties under T=20°C for grade 40KHN2MA (40XH2MA)

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	930	12	50	780	Guenching and drawing

Brinell hardness for 40KHN2MA (40XH2MA) (annealing) , GOST 4543-71	HB 10 ⁻¹ = 269 MPa
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Technological properties for grade 40KHN2MA (40XH2MA)

Weldability:	hard weldability.
Flakes :	predisposed
Temper brittleness:	not predisposed

Physical properties for grade 40KHN2MA (40XH2MA)

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	2.15		39	7850		331
100	2.11	11.6	38		490	
200	2.01	12.1	37		506	
300	1.9	12.7	37		522	
400	1.77	13.2	35		536	
500	1.73	13.6	33		565	
600		13.9	31			
700			29			
800			27			
T	E 10 ⁻⁵	α 10 ⁶	λ	ρ	C	R 10 ⁹

Equivalent steels for grade 40KHN2MA (40XH2MA)

Warning! Indicated both exact and nearest equivalents.

USA	Germany	Japan	France	England	European	Italy	Spain	Bulgaria	Hungary	Poland	Romania	Czechia
-	DIN, WNr	JIS	AFNOR	BS	EN	UNI	UNE	BDS	MSZ	PN	STAS	CSN
4340	1.6511	SNCM439	35NCD5	34CrNiMo6	1.6511	35NiCrMo6KB	35NiCrMo4	36CrNiMo4	36CrNiMo4	36HNM	T35MoCrNi08	16341
9840	1.6565	SNCM447	35NCD6	36NiCrMo4	1.6582	36NiCrMo4	36NiCrMo4	40ChN2MA	40HNMA			16342
G43400	1.7225		36NiCrMo4	708M40	34CrNiMo6	38NiCrMo4	42CrMo4					
G43406	34CrNiMo6		40NCD3	816M40	36CrNiMo4	38NiCrMo4KB	F.1280					
G98400	36CrNiMo4		42CD4TS	817A37	40NiCrMo4KD	40NiCrMo7						
Gr.9840	36NiCrMo4			817M37								
	40NiCrMo6			817M40								
	42CrMo4			818M40								
	G36CrNiMo4											

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 in 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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