

Database of Steel and Alloy (Marochnik)

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[Home](#) [European steel grades](#) [Steel and Alloy](#) [Search](#) [Equivalent grades](#) [Grading](#) [GOST Standard](#) [Contacts](#)

YOU HERE: Steel and Alloy -> Structural steel

Characteristics for grade 38KHA (38XA).

Grade :	38KHA (38XA)
Substitute:	40X, 35X, 40XH
Classification :	Alloy structural steel
Equivalent grades:	Go here

Chemical composition in % for grade 38KHA (38XA)

C	Si	Mn	Ni	S	P	Cr	Cu
0.35 - 0.42	0.17 - 0.37	0.5 - 0.8	max 0.3	max 0.025	max 0.025	0.8 - 1.1	max 0.3

Temperature of critical points for grade 38KHA (38XA).

$$Ac_1 = 740, \quad Ac_3(Ac_m) = 780, \quad Ar_3(Arc_m) = 730, \quad Ar_1 = 693, \quad Mn = 250$$

Mechanical properties under T=20°C for grade 38KHA (38XA)

Assortment	Dimension	Direct.	σ_B	σ_T	δ_5	ψ	KCU	Heat treatment
-	mm	-	MPa	MPa	%	%	kJ / m ²	-
Pipe, GOST 21729-76			588		14			
Bar, GOST 4543-71	Ø 25		930	780	12	50	880	Guenching 860°C, oil, Drawing 550°C, water,
Bar cold-drawn, GOST 10702-78			590			60		Annealing

Brinell hardness for 38KHA (38XA) (annealing), GOST 4543-71	HB 10 ⁻¹ = 207 MPa
Brinell hardness for 38KHA (38XA) , Bar GOST 10702-78	HB 10 ⁻¹ = 187 MPa

Technological properties for grade 38KHA (38XA)

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

Physical properties for grade 38KHA (38XA)

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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	1.96			7850		290
100		12.7	50			
200		13.1	46	7800		
300		13.5	42			
400		13.8	40			
500		14.2	37			
600		14.6	35	7650		
700			31			
T	E 10 ⁻⁵	α 10 ⁶	λ	ρ	C	R 10 ⁹

Equivalent steels for grade 38KHA (38XA)

Warning! Indicated both exact and nearest equivalents.

USA	Germany	Japan	France	England	European	Italy	China	Sweden	Bulgaria	Poland	Romania	Czechia	Austria
-	DIN, WNr	JIS	AFNOR	BS	EN	UNI	GB	SS	BDS	PN	STAS	CSN	ONORM
5140H	1.7034	SCr3	37Cr4	41Cr4	1.7034	38Cr4	35Cr	2245	38ChA	38HA	40Cr10X	14140	41Cr4SP
G51350	37Cr4	SCr35H	38C4	530A36	37Cr4	41Cr4				40H			
Gr.5135	37CrS4	SCr4	38C4FF	530M40									
	41Cr4	SCr435											
		SCr440											

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

[Top](#)

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