

Database of Steel and Alloy (Marochnik)

splat.kharkov.com/en

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

YOU HERE: [Steel and Alloy](#) -> [Structural steel](#)

Characteristics for grade 40KHS (40XC).

Grade :	40KHS (40XC)
Substitute:	38XC, 35XГТ
Classification :	Alloy structural steel
Equivalent grades:	Is absent

Chemical composition in % for grade 40KHS (40XC)

C	Si	Mn	Ni	S	P	Cr	Cu
0.37 - 0.45	1.2 - 1.6	0.3 - 0.6	max 0.3	max 0.035	max 0.035	1.3 - 1.6	max 0.3

Temperature of critical points for grade 40KHS (40XC).

$Ac_1 = 763$, $Ac_3(Ac_m) = 810$, $Ar_3(Arc_m) = 735$, $Ar_1 = 680$, $Mn = 320$

Mechanical properties under T=20°C for grade 40KHS (40XC)

Assortment	Dimension	Direct.	σ_B	σ_T	δ_5	ψ	KCU	Heat treatment
-	mm	-	MPa	MPa	%	%	kJ / m ²	-
Bar	Ø 20		960	800	19	62	1220	Guenching 900°C, oil, Drawing 640°C, water,
Bar	Ø 40		930	730	19	59	1080	Guenching 900°C, oil, Drawing 640°C, water,
Bar	Ø 60		870	700	19	54	880	Guenching 900°C, oil, Drawing 640°C, water,
Bar, GOST 4543-71	Ø 25		1230	1080	12	40	340	Guenching and drawing

Brinell hardness for 40KHS (40XC) (annealing), GOST 4543-71

HB 10⁻¹ = 255 MPa

Technological properties for grade 40KHS (40XC)

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

Physical properties for grade 40KHS (40XC)

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	2.19			7740		
100		11.7		7720		
200		12.7	36	7690		
300		13.4				
400		14	35	7620		
500		14.4				
600		14.8	34	7540		
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).
 Helpful for specialists in grade technology, structural engineer, mechanical engineer, metallurgy and metal trader

[Top](#)

© 2003 - 2013 All rights reserved. [About program.](#)

The entire risk as to use of the Database of Steel and Alloy (Marochnik) content is assumed by you the user

