

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](#) -> [Tool steel](#)

Characteristics for grade 9KHS (9XC).

Grade :	9KHS (9XC)
Substitute:	XBG, XBCГ
Classification :	Alloy tool steel
Equivalent grades:	Go here

Chemical composition in % for grade 9KHS (9XC)

C	Si	Mn	Ni	S	P	Cr	Mo	W	V	Ti	Cu
0.85 - 0.95	1.2 - 1.6	0.3 - 0.6	max 0.4	max 0.03	max 0.03	0.95 - 1.25	max 0.2	max 0.2	max 0.15	max 0.03	max 0.3

Temperature of critical points for grade 9KHS (9XC).

$Ac_1 = 770$, $Ac_3(Ac_m) = 870$, $Ar_1 = 730$, $Mn = 160$

Mechanical properties under T=20°C for grade 9KHS (9XC)

Assortment	Dimension	Direct.	σ_B	σ_T	δ_5	ψ	KCU	Heat treatment
-	mm	-	MPa	MPa	%	%	kJ / m ²	-
			790	445	26	54	390	As-delivered state

Brinell hardness for 9KHS (9XC) (annealing), GOST 5950-2000	HB 10 ⁻¹ = 241 MPa
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Technological properties for grade 9KHS (9XC)

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

Physical properties for grade 9KHS (9XC)

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	1.9			7830		400

Equivalent steels for grade 9KHS (9XC)

Warning! Indicated both exact and nearest equivalents.

Germany
DIN,WNr
150Cr14 90CrSi 90CrSi5

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, carbide 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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