

Database of Steel and Alloy (Marochnik)

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Characteristics for grade 30KH13 (30X13).

Grade :	30KH13 (30X13) (3X13)
Substitute:	40X13
Classification :	Corrosion-resistant high-temperature steel
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Chemical composition in % for grade 30KH13 (30X13)

C	Si	Mn	Ni	S	P	Cr	Ti	Cu
0.26 - 0.35	max 0.8	max 0.8	max 0.6	max 0.025	max 0.03	12 - 14	max 0.2	max 0.3

Temperature of critical points for grade 30KH13 (30X13).

$Ac_1 = 810$, $Ac_3(Ac_m) = 860$, $Ar_3(Arc_m) = 660$, $Ar_1 = 710$, $Mn = 240$

Mechanical properties under T=20°C for grade 30KH13 (30X13)

Assortment	Dimension	Direct.	σ_B	σ_T	δ_5	ψ	KCU	Heat treatment
-	mm	-	MPa	MPa	%	%	kJ / m ²	-
Sheet, GOST 5582-75	1 - 4	dihedral	540		17			Drawing 740 - 800°C,
Bar, GOST 18907-73			530-780		12			
Wire, GOST 18143-72			590-830		12-16			
Forging, GOST 25054-81	to 600	longitudinal	735	588	10-12	35-40	290-390	Guenching and drawing

Brinell hardness for 30KH13 (30X13) (quenching, tempering), GOST 25054-81	HB 10 ⁻¹ = 235 - 277 MPa
Brinell hardness for 30KH13 (30X13) (annealing), Bar GOST 5949-75	HB 10 ⁻¹ = 131 - 207 MPa

Technological properties for grade 30KH13 (30X13)

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

Physical properties for grade 30KH13 (30X13)

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	2.23			7670		522
100		9.98	26.4	7650	473	595
200	2.14	10.65	27.2	7620	502	684
300	2.06	11.13	27.7	7600	540	769

400	1.97	11.7	27.7	7570	582	858
500	1.85	11.83	27.2	7540	653	935
600	1.74	12.3	26.7	7510	749	1015
700		12.5	25.6	7480	879	1099
800		12.6	25.1	7450	783	
900			26.7	7460	657	
T	$E \cdot 10^{-5}$	$\alpha \cdot 10^6$	λ	ρ	C	$R \cdot 10^9$

Equivalent steels for grade 30KH13 (30X13)

Warning! Indicated both exact and nearest equivalents.

USA	Germany	Japan	France	England	European	Italy	Spain	China	Sweden	Poland	Czechia
-	DIN, WNr	JIS	AFNOR	BS	EN	UNI	UNE	GB	SS	PN	CSN
420 420F S42020	1.4028 X20Cr13 X30Cr13	SUS420J2	410F21 Z30C13 Z33C13	420S45 En56D	1.4028 X30Cr13	GX30Cr13 X30Cr13	F.3403 X30Cr13	3Cr13	2304	3H13	17023

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

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