

Database of Steel and Alloy (Marochnik)

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Characteristics for grade 31KH19N9MVBT (31X19H9MB5T).

Grade :	31KH19N9MVBT (31X19H9MB5T)(3X19H9MB5T 31572)
Classification :	High alloy high-temperature steel
Equivalent grades:	Go here

Chemical composition in % for grade 31KH19N9MVBT (31X19H9MB5T)

C	Si	Mn	Ni	S	P	Cr	Mo	W	Nb	Ti
0.28 - 0.35	max 0.8	0.8 - 1.5	8 - 10	max 0.02	max 0.035	18 - 20	1 - 1.5	1 - 1.5	0.2 - 0.5	0.2 - 0.5

Mechanical properties under T=20°C for grade 31KH19N9MVBT (31X19H9MB5T)

Assortment	Dimension	Direct.	σ_B	σ_T	δ_5	ψ	KCU	Heat treatment
-	mm	-	MPa	MPa	%	%	kJ / m ²	-
Bar, GOST 5949-75		longitudinal	590	295	30	40		Heating 1140 - 1180°C, water, Ageing 750 - 800°C, 15h, air,
Forging		longitudinal	700	300	35	40	600	Heating 1180°C, water, Ageing 800°C, 15h, air,
Forging		tangent	700	300	27	30	400	Heating 1180°C, water, Ageing 800°C, 15h, air,

Technological properties for grade 31KH19N9MVBT (31X19H9MB5T)

Weldability:	hard weldability.
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Physical properties for grade 31KH19N9MVBT (31X19H9MB5T)

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	2.05			7960		
100			15.1			850
200			16.3			900
300	1.9		18.4			980
400	1.85	16.02	20.05			1020
500	1.79	16.37	21.7			1080
550	1.75					
600	1.7	16.75	23.4			1100
650	1.65					
700	1.6	16.97	25.1			1150
800		17.94				
T	E 10 ⁻⁵	α 10 ⁶	λ	ρ	C	R 10 ⁹

Equivalent steels for grade 31KH19N9MVBT (31X19H9MB5T)

Warning! Indicated both exact and nearest equivalents.

USA
-
S63198 S63199

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 / m ²]
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/m ³]
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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