

Database of Steel and Alloy (Marochnik)

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Characteristics for grade 18KH12VMBFR (18X12BMБФР).

Grade :	18KH12VMBFR (18X12BMБФР) (2X12BMБФР ЭИ993)
Classification :	High alloy high-temperature steel
Equivalent grades:	Is absent

Chemical composition in % for grade 18KH12VMBFR (18X12BMБФР)

C	Si	Mn	Ni	S	P	Cr	Mo	W	V	Nb	B
0.15 - 0.22	max 0.5	max 0.5	max 0.06	max 0.025	max 0.03	11 - 13	0.4 - 0.6	0.4 - 0.7	0.15 - 0.18	0.2 - 0.4	max 0.003

Temperature of critical points for grade 18KH12VMBFR (18X12BMБФР).

$Ac_1 = 850$, $Ac_3(Ac_m) = 930$

Mechanical properties under T=20°C for grade 18KH12VMBFR (18X12BMБФР)

Assortment	Dimension	Direct.	σ_B	σ_T	δ_5	ψ	KCU	Heat treatment
-	mm	-	MPa	MPa	%	%	kJ / m ²	-
Pipe	Ø 30 x 6	dihedral	820	640	17	56	900	Normalizing 1050°C, Cooling air, Drawing 750°C, 3h, Cooling air,
Pipe	Ø 219 x 27	dihedral	750	590	15	43	400	Normalizing 1050°C, Cooling air, Drawing 750°C, 3h, Cooling air,
Bar, GOST 5949-75	Ø 60		740	490	12	45	390	Guenching and drawing

Brinell hardness for 18KH12VMBFR (18X12BMБФР) (annealing), Bar GOST 5949-75

HB 10 ⁻¹ = 229 MPa

Technological properties for grade 18KH12VMBFR (18X12BMБФР)

Weldability:	is not used.
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Physical properties for grade 18KH12VMBFR (18X12BMБФР)

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	2.28		27.6	7850		
100		11.15	21.8			
200	2.15	11.13	24			
300	2.09	11.42	25.1			
400	1.95	11.8	26.3			
500	1.88	12	27.2			
600	1.73	12.5	28			
700	1.55	12.65	28.9			

800		11.6				
T	E 10 ⁻⁵	α 10 ⁶	λ	ρ	C	R 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 - Termal (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 treeting
limited weldability - welding is possible under heating up to 100-120 grade and subsequent heat treeting
hard weldability - obtaining the quality welding needs the additional operations:heating up to 200-300 grade; the heat treeting ia annealing

Database of steels and alloys (Marochnik) contains information about chemical composition and properties more then 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

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