

Database of Steel and Alloy (Marochnik)

splav.kharkov.com/en

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

YOU HERE: [Steel and Alloy](#) -> [High-temperature or heat-resistant steel and alloy](#)

Characteristics for grade 20KH3MVФ (20X3MBΦ).

Grade :	20KH3MVФ (20X3MBΦ)(20Х415 20Х579)
Classification :	Relaxation-resistant steel
Equivalent grades:	Is absent

Chemical composition in % for grade 20KH3MVФ (20X3MBΦ)

C	Si	Mn	Ni	S	P	Cr	Mo	W	V	Cu
0.15 - 0.23	0.17 - 0.37	0.25 - 0.5	max 0.3	max 0.025	max 0.03	2.8 - 3.3	0.35 - 0.55	0.3 - 0.5	0.6 - 0.85	max 0.2

Temperature of critical points for grade 20KH3MVФ (20X3MBΦ).

$A_{c1} = 800 - 830$, $A_{c3}(A_{cm}) = 900 - 950$, $A_{r3}(A_{rcm}) = 790 - 800$, $A_{r1} = 680 - 700$
--

Mechanical properties under T=20°C for grade 20KH3MVФ (20X3MBΦ)

Assortment	Dimension	Direct.	σ_B	σ_T	δ_5	ψ	KCU	Heat treatment
-	mm	-	MPa	MPa	%	%	kJ / m ²	-
Bar, band, GOST 20072-74		longitudinal	880	735	12	40	590	Guenching 1030 - 1060°C, oil, Drawing 660 - 700°C,
Arbor, rotor		longitudinal	750	650	13	40	500	Guenching 1030 - 1060°C, oil, Drawing 660 - 700°C,
Arbor, rotor		tangent	730	620	11	32	400	Guenching 1030 - 1060°C, oil, Drawing 660 - 700°C,

Brinell hardness for 20KH3MVФ (20X3MBΦ) (hot-rolled, annealing) , GOST 20072-74	HB 10 ⁻¹ = 269 MPa
---	-------------------------------

Technological properties for grade 20KH3MVФ (20X3MBΦ)

Weldability:	limited weldability.
--------------	----------------------

Physical properties for grade 20KH3MVФ (20X3MBΦ)

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	2.07		38.5	7800		
100	2.04	10.6	35.6		502	398
200	2	11.5	33.1		560	465
300	1.93	11.8	31.4		610	544
400	1.86	12.1	30.6	7690	650	640
500	1.82	12.6	29.7	7660	710	743
600	1.77	13	29.3	7620	750	859
700	1.71		28.9			982

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 - 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).
 Helpfull 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

