

Database of Steel and Alloy (Marochnik)

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Characteristics for grade 25KH1MF (25X1MΦ).

Grade :	25KH1MF (25X1MΦ) (ЭИ10)
Classification :	Relaxation-resistant steel
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Chemical composition in % for grade 25KH1MF (25X1MΦ)

C	Si	Mn	Ni	S	P	Cr	Mo	V	Cu
0.22 - 0.29	0.17 - 0.37	0.4 - 0.7	max 0.3	max 0.025	max 0.03	1.5 - 1.8	0.25 - 0.35	0.15 - 0.3	max 0.2

Temperature of critical points for grade 25KH1MF (25X1MΦ).

$Ac_1 = 760$, $Ac_3(Ac_m) = 840$, $Ar_3(Arc_m) = 760 - 780$, $Ar_1 = 680 - 690$

Mechanical properties under T=20°C for grade 25KH1MF (25X1MΦ)

Assortment	Dimension	Direct.	σ_B	σ_T	δ_5	ψ	KCU	Heat treatment
-	mm	-	MPa	MPa	%	%	kJ / m ²	-
Bar, band, GOST 20072-74	max thickness 25	longitudinal	880	735	14	50	590	Guenching 880 - 900°C, oil, Drawing 640 - 660°C, Cooling air,
Bar, band, GOST 20072-74		longitudinal	780	665	16	50	590	Guenching 930 - 950°C, oil, Drawing 620 - 660°C,

Brinell hardness for 25KH1MF (25X1MΦ) (quenching, tempering) ,	HB 10 ⁻¹ = 241 - 321 MPa
Brinell hardness for 25KH1MF (25X1MΦ) (hot-rolled, annealing) , GOST 20072-74	HB 10 ⁻¹ = 229 MPa

Technological properties for grade 25KH1MF (25X1MΦ)

Weldability:	hard weldability.
Flakes :	predisposed
Temper brittleness:	not predisposed

Physical properties for grade 25KH1MF (25X1MΦ)

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	2.17			7840		
100	2.11	11.3	39.8		462	312
200	2.06	11.7	37.9	7790		396
300	1.98	12.8	36.9			475
400	1.91	13.9	35.9	7720		574

500	1.8	14.2	34.8			680
600	1.67	14.4		7650		826
T	$E \cdot 10^{-5}$	$\alpha \cdot 10^6$	λ	ρ	C	$R \cdot 10^9$

Equivalent steels for grade 25KH1MF (25X1MΦ)

Warning! Indicated both exact and nearest equivalents.

USA	Germany	France	England	European	China	Czechia
-	DIN, WNr	AFNOR	BS	EN	GB	CSN
A193B14	1.7733 21CrMoV5-7 24CrMoV55	21CrMoV5-7	21CrMoV5-7	1.7709 21CrMoV5-7	25CrMoVA	15236

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

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