

Database of Steel and Alloy (Marochnik)

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Characteristics for grade 12KHM (12XM).

Grade :	12KHM (12XM)
Classification :	Low alloy high-temperature steel
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Chemical composition in % for grade 12KHM (12XM)

C	Si	Mn	Ni	S	P	Cr	Mo
max 0.16	0.17 - 0.37	0.4 - 0.7	max 0.3	max 0.025	max 0.025	0.8 - 1.1	0.4 - 0.55

Temperature of critical points for grade 12KHM (12XM).

$Ac_1 = 720$, $Ac_3(Ac_m) = 880$, $Ar_3(Arc_m) = 790$, $Ar_1 = 695$
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Mechanical properties under T=20°C for grade 12KHM (12XM)

Assortment	Dimension	Direct.	σ_B	σ_T	δ_5	ψ	KCU	Heat treatment
-	mm	-	MPa	MPa	%	%	kJ / m ²	-
Sheet, GOST 5520-79			430-550	235-245	18-22		490-590	
Pipe	Ø 273 x 28	longitudinal	455	284	31.5	66.5	1930	Normalizing 910 - 930°C, Drawing 670 - 690°C, Cooling air,

Physical properties for grade 12KHM (12XM)

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	2.16			7850	498	
100	2.1	11.2	50.24			240
200	2.04	12.5	50.24		519	330
300	1.99	12.7	50.24		569	410
400	1.93	12.9	48.56		595	540
500	1.82	13.2	46.89		653	640
600	1.73	13.5	46.05		733	740
700		13.8	43.96		888	900
T	E 10 ⁻⁵	α 10 ⁶	λ	ρ	C	R 10 ⁹

Equivalent steels for grade 12KHM (12XM)

Warning! Indicated both exact and nearest equivalents.

USA	Germany	Japan	France	England	European	Italy	Belgium	Spain	China	Sweden	Bulgaria	Hungary	Poland	Romania	Czechia	Austria	South Korea
-	DIN, WNr	JIS	AFNOR	BS	EN	UNI	NBN	UNE	GB	SS	BDS	MSZ	PN	STAS	CSN	ONORM	KS
A182 A387Gr.12Cl.2 Gr.P12 K11562 K11572 K11597 K11757 K12062	1.7335 13CrMo4 13CrMo4-5 13CrMo44	SFVA12 SFVAF12 STBA20 STBA22 STFA22 STPA20 STPA22	13CrMo4-5 14CrMo4-5 1501-620 1501-621 15CD3.5 15CD4.05 15CD4.5	13CrMo4-5 1501-620 1501-621 620-440 620-470 620-540	1.7335 13CrMo4-5 5	13CrMo4-5 14CrMo3 16CrMo3	14CrMo45 5	14CrMo4-5 F.2613 F.2631	12CrMo 12CrMoG	2216	13CrMo4-5 14ChM 15ChM	13CrMo4-5 KL9	15HM	14CrMo4	15121	13CrMo4-4KW	SFVAF12 STHA20 STHA22

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 ⁰ - T) , [1/Grade]
λ	- Thermal (heat) condition coefficient , [Watt/(m·Grade)]
ρ	- Density , [kg/m ³]
C	- Specific heat (range 20 ⁰ - T) , [J/(kg·Grade)]
R	- Electrical resistance , [Ohm·m]

12KHM (12XM) - Low alloy high-temperature steel. Marochnik

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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