

Database of Steel and Alloy (Marochnik)

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Characteristics for grade 35KHM (35XM).

Grade :	35KHM (35XM)
Substitute:	40X, 40XH, 30XM, 35XГCA
Classification :	Relaxation-resistant steel
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Chemical composition in % for grade 35KHM (35XM)

C	Si	Mn	Ni	S	P	Cr	Mo	Cu
0.32 - 0.4	0.17 - 0.37	0.4 - 0.7	max 0.3	max 0.035	max 0.035	0.8 - 1.1	0.15 - 0.25	max 0.3

Temperature of critical points for grade 35KHM (35XM).

$A_{c1} = 755$, $A_{c3}(A_{cm}) = 800$, $A_{r3}(A_{rcm}) = 750$, $A_{r1} = 695$
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Mechanical properties under T=20°C for grade 35KHM (35XM)

Assortment	Dimension	Direct.	σ_B	σ_T	δ_5	ψ	KCU	Heat treatment
-	mm	-	MPa	MPa	%	%	kJ / m ²	-
Bar, GOST 4543-71	Ø 25		930	835	12	45	780	Guenching and drawing
Forging	max thickness 100	longitudinal	950	750	13	42	650	Guenching 850 - 880°C, oil, Drawing 585 - 650°C,
Forging	max thickness 120	longitudinal	900	710	13	42	650	Guenching 850 - 880°C, oil, Drawing 585 - 650°C,
Forging	max thickness 150	longitudinal	800	600	14	45	650	Guenching 850 - 880°C, oil, Drawing 585 - 650°C,
Forging	max thickness 200	longitudinal	700	500	16	45	600	Guenching 850 - 880°C, oil, Drawing 585 - 650°C,

Brinell hardness for 35KHM (35XM) (annealing), GOST 4543-71	HB 10 ⁻¹ = 241 MPa
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Technological properties for grade 35KHM (35XM)

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

Physical properties for grade 35KHM (35XM)

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	2.18			7820		328
100	2.16	12.3	40.6	7800	462	360
200		12.6	39.8	7770		
300	2.05	12.9	38.5	7740		425
400	1.95	13.9	37.3	7700		523
500	1.86	14.4		7660		628
600		14.6				
T	E 10 ⁻⁵	α 10 ⁶	λ	ρ	C	R 10 ⁹

Equivalent steels for grade 35KHM (35XM)

Warning! Indicated both exact and nearest equivalents.

USA	Germany	Japan	France	England	European	Italy	Belgium	Spain	China	Sweden	Bulgaria	Hungary	Poland	Romania	Czechia	Finland	A
-	DIN, WNr	JIS	AFNOR	BS	EN	UNI	NBN	UNE	GB	SS	BDS	MSZ	PN	STAS	CSN	SFS	Of
4135	1.7220	SCCrM3	34CD4	34CrMo4	1.7220	30CrMo4	34CrMo4	34CrMo4	35CrMo	2234	30ChML	34CrMo4	35HM	33MoCr11	15131	G-	BOH
4135H	34CrMo4	SCM3	34CD4FF	708A37	1.7225	34CrMo4		35CrMo4	ML35CrMo		34CrMo4	CMo3Z	35HMA	34MoCr11		34CrMo4	
4137	34CrMoS4	SCM430	34CrMo4		34CrMo4	34CrMo4KB		35CrMo4DF	ZG35CrMo		35ChM		L35HM	34MoCr11AS			
4137H	42CrMo4	SCM432	34CrMo4RR		34CrMo4KD	35CrMo4		AM34CrMo4						34MoCr11q			
G41300	GS-	SCM435	35CD4		42CrMo4	35CrMo4F		F.1250									
G41350	34CrMo4	SCM435H	38CD4					F.1254									
G41370		SCM440H						F.8231									
J13048								F.8331									

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 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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