

Database of Steel and Alloy (Marochnik)

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Characteristics for grade 12KH25N16G7AR (12X25H16Г7AP).

Grade :	12KH25N16G7AR (12X25H16Г7AP) (X25H16Г7AP ЭИ835)
Classification :	High alloy high-temperature steel
Equivalent grades:	Is absent

Chemical composition in % for grade 12KH25N16G7AR (12X25H16Г7AP)

Fe	C	Si	Mn	Ni	S	P	Cr	B
47.815 - 57	max 0.12	max 1	5 - 7	15 - 18	max 0.02	max 0.035	23 - 26	max 0.01

Mechanical properties under T=20°C for grade 12KH25N16G7AR (12X25H16Г7AP)

Assortment	Dimension	Direct.	σ_B	σ_T	δ_5	ψ	KCU	Heat treatment
-	mm	-	MPa	MPa	%	%	kJ / m ²	-
Bar, GOST 5949-75	to Ø 60		690	325	40	45		Guenching 1050 - 1150°C, Cooling air,
Sheet trick, GOST 7350-77			740	390	50			Guenching 1050 - 1150°C, Cooling water,
Sheet thin, GOST 5582-75			980		35			Guenching 1050 - 1100°C, Cooling water,
Sheet thin, GOST 4986-79			690		15-30			Guenching 1050 - 1100°C, air,
Profile		longitudinal	700	330	40			Heating 1100 - 1150°C, air,

Technological properties for grade 12KH25N16G7AR (12X25H16Г7AP)

Weldability:	without limitations.
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Physical properties for grade 12KH25N16G7AR (12X25H16Г7AP)

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	1.965		13.82	7820		1060
100	1.894	16.6	15.07			1100
200	1.815	16.2	16.33			1170
300	1.74	16.8	17.59			1200
400	1.66	17.4	19.26			1240
500	1.595	18	20.94			1280
600	1.495	18.3	22.19			1310
700	1.41	18.5	23.87			1330
800	1.335	18.7	25.54			1360
900	1.3	18.9	27.63			1390
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 / m ²]
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/m ³]
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).
Helpful for specialists in grade technology, structural engineer, mechanical engineer, metallurgy and metal trader

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