

Database of Steel and Alloy (Marochnik)

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Characteristics for grade 20K (20K).

Grade :	20K (20K)
Substitute:	15K
Classification :	High quality structural carbon steel
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Chemical composition in % for grade 20K (20K)

C	Si	Mn	Ni	S	P	Cr	Cu	As
0.16 - 0.24	0.15 - 0.3	0.35 - 0.65	max 0.3	max 0.04	max 0.04	max 0.3	max 0.3	max 0.08

Temperature of critical points for grade 20K (20K).

$Ac_1 = 724$, $Ac_3(Ac_m) = 845$, $Ar_3(Arc_m) = 817$, $Ar_1 = 682$
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Mechanical properties under T=20°C for grade 20K (20K)

Assortment	Dimension	Direct.	σ_B	σ_T	δ_5	ψ	KCU	Heat treatment
-	mm	-	MPa	MPa	%	%	kJ / m ²	-
Sheet, GOST 5520-79			400-510	225-245	23-25		490-590	

Technological properties for grade 20K (20K)

Weldability:	without limitations.
Flakes :	not predisposed
Temper brittleness:	not predisposed

Physical properties for grade 20K (20K)

T	$E \cdot 10^{-5}$	$\alpha \cdot 10^6$	λ	ρ	C	$R \cdot 10^9$
Grade	MPa	1/Grade	Watt/(m·Grade)	kg/m ³	J/(kg·Grade)	Ohm·m
20	2.11			7870	482	200
100	2.08		51	7840	486	219
200	2.05	12	49	7810	498	292
300	2	12.8	46	7780	514	381
400	1.91	13.2	42	7740	533	487
500	1.8	13.6	39	7710	555	601
600	1.65	13.85	36	7670	584	758
700				7630	636	925
800				7640	703	1094
900				7610	703	1135
1000				7550	695	1167
1100				7490	691	1194
1200					687	1219
T	$E \cdot 10^{-5}$	$\alpha \cdot 10^6$	λ	ρ	C	$R \cdot 10^9$

Equivalent steels for grade 20K (20K)

Warning! Indicated both exact and nearest equivalents.

USA	Germany	Japan	France	England	European	Italy	Belgium	Spain	Sweden	Bulgaria	Hungary	Poland	Romania	Czechia	Austria	South Korea
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-	DIN,WNr	JIS	AFNOR	BS	EN	UNI	NBN	UNE	SS	BDS	MSZ	PN	STAS	CSN	ONORM	KS
Gr.60	1.0426	SG295	A42AP	1501Gr.164-	1.0425	Fe4102KG	D42-2	A42RCI	1430	16K	KL2C	St3M	K410	11416	S41KW	SPPV315
K01701	ASt41	SGV410	A42CP	360	P265GH	Fe4102KW		A42RCII	1431	P265GH	P265GH	St41K	OL44.3	11418		SPPV355
K02401	H3	SGV450	A42F	151-400		Fe410KW			1432					11431		
K02402	H4	SGV480	P265GH	161-430		P265GH										
K02505	P265GH	SM53B		164-360												
K02801	St45-8	SM53C		400-22												
X42		SPV235		P265GH												
		SPV315														

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 treeting
limited weldability - welding is possible under heating up to 100-120 grade and subsequent heat treeting
hard weldability - obtaining the quality welding needs the additional operations:heating up to 200-300 grade; the heat treeting 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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