

Database of Steel and Alloy (Marochnik)

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Characteristics for grade VT5-1 (BT5-1).

Grade :	VT5-1 (BT5-1)
Classification :	Titanium wrought alloy
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Chemical composition in % for grade VT5-1 (BT5-1)

Fe	C	Si	V	N	Ti	Al	Zr	O	Sn	H	Impurity
max 0.3	max 0.1	max 0.12	max 1	max 0.05	88.83 - 93.4	4.3 - 6	max 0.3	max 0.15	2 - 3	max 0.015	other 0.3

Comment: Ti is a basis; the percentage of Ti is given approximately.

Mechanical properties under T=20°C for grade VT5-1 (BT5-1)

Assortment	Dimension	Direct.	σ_B	σ_T	δ_5	ψ	KCU	Heat treatment
-	mm	-	MPa	MPa	%	%	kJ / m ²	-
Sheet annealed , GOST 22178-76			735		8-15			
Bar annealed , GOST 26492-85			745-785		6-8	15-20	400	
Bar, GOST 26492-85			745-980		6-10	18-25	400-450	Annealing
Plate , GOST 23755-79	11 - 35		735-930		6	12		

Brinell hardness for VT5-1 (BT5-1) ,	HB 10⁻¹ = 241 - 321 MPa
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Technological properties for grade VT5-1 (BT5-1)

Weldability:	without limitations.
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Physical properties for grade VT5-1 (BT5-1)

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	1.1			4425	0.502	1380
100		8.3			0.544	
200		9.3	10.88		0.565	
300		9.7	12.14		0.586	
400		10	13.14		0.628	

500		10.3	14.65		0.67	
600		10.4	15.91			
T	$E 10^{-5}$	$\alpha 10^6$	λ	ρ	C	$R 10^9$

Equivalent steels for grade VT5-1 (BT5-1)

Warning! Indicated both exact and nearest equivalents.

USA	Germany	Japan	France	England
-	DIN,WNr	JIS	AFNOR	BS
5Al-2.5Sn Grade6	3.7114 3.7115	KS-5-2.5 SAT-525	Ti-P.65	IMI317

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 - Termal (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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