

Database of Steel and Alloy (Marochnik)

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Characteristics for grade VSt3sp (BCт3сп).

Grade :	VSt3sp (BCт3сп)
Substitute:	BCт3сп
Classification :	Normal quality structural carbon steel
Equivalent grades:	Go here

Chemical composition in % for grade VSt3sp (BCт3сп)

C	Si	Mn	Ni	S	P	Cr	Cu	As
0.14 - 0.22	0.12 - 0.3	0.4 - 0.65	max 0.3	max 0.05	max 0.04	max 0.3	max 0.3	max 0.08

Temperature of critical points for grade VSt3sp (BCт3сп).

$A_{c1} = 735$, $A_{c3}(A_{cm}) = 850$, $A_{r3}(A_{rcm}) = 835$, $A_{r1} = 680$

Mechanical properties under T=20°C for grade VSt3sp (BCт3сп)

Assortment	Dimension	Direct.	σ_B	σ_T	δ_5	ψ	KCU	Heat treatment
-	mm	-	MPa	MPa	%	%	kJ / m ²	-
Forging	to 100		353	175	28	55	640	Normalizing
Forging	100 - 300		353	175	24	50	590	Normalizing
Rolled stock hotrolled	to 20		370-480	245	26			As-delivered state

Technological properties for grade VSt3sp (BCт3сп)

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

Physical properties for grade VSt3sp (BCт3сп)

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	1.94			7850		
100	1.92					
200	1.87					
300	1.83					

400	1.78					
500	1.67					
600	1.59					
700	1.46					
800	1.2					
900	0.99					
T	$E \cdot 10^{-5}$	$\alpha \cdot 10^6$	λ	ρ	C	$R \cdot 10^9$

Equivalent steels for grade VSt3sp (BCτ3cn)

Warning! Indicated both exact and nearest equivalents.

USA	Germany
-	DIN,WNr
A570-36	RSt37-2

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 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).
 Helpfull for specialists in grade technology, structural engineer, mechanical engineer, metallurgy and metal trader

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