

Database of Steel and Alloy (Marochnik)

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Characteristics for grade SHKH15 (ШХ15).

Grade :	SHKH15 (ШХ15) (ШХ15-Ш ШХ15-В)
Substitute:	ШХ9, ШХ12, ШХ15СГ
Classification :	Bearing structural steel
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Chemical composition in % for grade SHKH15 (ШХ15)

C	Si	Mn	Ni	S	P	Cr	Ti	Cu	O
0.95 - 1.05	0.17 - 0.37	0.2 - 0.4	max 0.3	max 0.02	max 0.027	1.3 - 1.65	max 0.01	max 0.25	max 0.0015

Temperature of critical points for grade SHKH15 (ШХ15).

$A_{c1} = 724$, $A_{c3}(A_{cm}) = 900$, $A_{r3}(A_{rcm}) = 713$, $A_{r1} = 700$, $M_n = 210$

Mechanical properties under T=20°C for grade SHKH15 (ШХ15)

Assortment	Dimension	Direct.	σ_B	σ_T	δ_5	ψ	KCU	Heat treatment
-	mm	-	MPa	MPa	%	%	kJ / m ²	-
Steel			590-730	370-410	20	45	440	Annealing 800°C, oven, 15 °C/h,

Brinell hardness for SHKH15 (ШХ15) , GOST 801-78

HB 10 ⁻¹ = 179 - 207 MPa

Technological properties for grade SHKH15 (ШХ15)

Flakes :	predisposed
Temper brittleness:	predisposed

Physical properties for grade SHKH15 (ШХ15)

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	2.11			7812		
100		11.9		7790		390
200		15.1	40	7750		470
300		15.5		7720		520
400		15.6	37	7680		
500		15.7	32	7640		
T	E 10 ⁻⁵	α 10 ⁶	λ	ρ	C	R 10 ⁹

Equivalent steels for grade SHKH15 (ШХ15)

Warning! Indicated both exact and nearest equivalents.

USA	Germany	Japan	France	England	European	Italy	Spain	China	Sweden	Bulgaria	Hungary	Poland	Romania	Czechia	Australia	South Korea
-	DIN, WNr	JIS	AFNOR	BS	EN	UNI	UNE	GB	SS	BDS	MSZ	PN	STAS	CSN	AS	KS

52100	1.3505	SUJ2	100C6	2S135	1.2067	100Cr6	100Cr6	Cr2	2258	SchCh15	GO3	LH15	RUL1	14100	5210	STB2
G52986	100Cr6	SUJ4	100Cr6	534A99	1.3505		F.1310	GCr15					RUL1v	14109		STB4
J19965	102Cr6		100Cr6RR	535A99	100Cr6											
					102Cr6											

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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