

Quality	X5CrNiCuNb16-4
According to Standard	EN 10088 - 3 : 2014
Number	1.4542 (17-4PH)

Comparable Standards	German DIN	France AFNOR	Spain UNE	China GB	U.K. B.S.	Russia GOST	USA AISI - SAE	Japan JIS	Republic of Korea KS
	X5CrNiCuNb16-4	-	-	05Cr17Ni4Cu4Nb	-	-	S17400	SUS 630	STS 630

Chemical Analysis	C% max	Si% max	Mn% max	P% max	S% max	Cr% max	Mo% max	Ni% max	Cu% max	Nb% max
	0.07	0.70	1.50	0.040	0.030	15.0 - 17.0	0.60	3.0 - 5.0	3.0 - 5.0	5 X C < 0.45
	+/- 0.01	+/- 0.05	+/- 0.04	+/- 0.005	+/- 0.005	+/- 0.2	+/- 0.03	+/- 0.07	+/- 0.10	0.04

Hot Work and Heat Treatment Temperatures

Temperature °C									
Melting Range	Hot Forming	Solution Annealing (Solubilization) + AT		Stress-relieving +SR	Mill Annealing	Precipitation hardening +P			
1440-1400	1175-1095	1060-1030 oil, air (HB max 360)		660-600 furnace	1050-1020	+P800	+P930	+P960	+P1070
					air, oil, under Mf (HB max 229)	760air + 620air	620air	590air	550air
						+P 1300 - 480 oil			

Mechanical Properties at Room Temperature

Heat-treated materials EN 100883-3:2014 in CONDITIONS 1C, 1E, 1D, 1X, 1G, 2D

Size mm from	Testing at room temperature								Heat Treatment Condition
	to	R N/mm2	Rp 0.2 N/mm2 min.	A% min (L)	A% min (T)	Kv2 +20 °C J min (L)	Kv2 +20 °C J min (T)	HBW a) max	
100	1200 max	-	-	-	-	-	-	360	+AT
100	800-950	520	18	-	75	-	-	-	+P800
100	930-1100	720	16	-	40	-	-	-	+P930
100	960-1160	790	12	-	-	-	-	-	+P960
100	1070-1270	1000	10	-	-	-	-	-	+P1070

a) for information only (L) = longitudinal (T) = transversal

Bright bars of heat-treated materials EN 10088-3: 2014 in Conditions 2H, 2B, 2G, 2P

Size mm from	Testing at room temperature								Heat Treatment Condition
	to	R N/mm2	Rp 0.2 N/mm2 min.	A% min(L)	A% min(T)	Kv2 + 20°C J min (L)	Kv2 + 20°C J min (T)		
10 b)	900-1100	600	10	-	-	-	-		
10	16	900-1100	600	10	-	-	-		
16	40	800-1050	520	12	-	75	-	+P800	
40	63	800-1000	520	18	-	75	-		
63	160	800-950	520	18	-	75	-		
100	930-1100	720	12	-	40	-	-	+P930	
100	960-1160	790	10	-	-	-	-	+P960	
100	1070-1270	1000	10	-	-	-	-	+P1070	

b) in the range of 1 mm ≤ d ≤ 5 mm , values are valid only for rounds - the mechanical properties of non round bars of < 5 mm of thickness have to be agreed at the time of request and order (L) = longitudinal (T) = transversal

Precipitation hardening temperature °C / Hardness. Material colubilized at 1040 °C. Approximate values.

HRC	34	34	38	43	47	42	36	33
HV 10	336	336	372	423	458	412	354	327
N/mm2	1050	1050	1180	1390	1700	1340	1110	1030
°C	100	200	300	400	450	500	600	650

Effect of cold-working (hot-rolled, solution annealing and cold-drawn). Approximate values.

R N/mm2	880	960	1000	1020	1060	1100	1120	1160	1200	1260
Rp 0.2 N/mm2	700	820	860	900	980	1000	1000	1020	1050	1080
A%	20	12	11	10	8	8	8	8	8	8
Reduction %	0	10	15	20	30	40	50	60	70	75