

Quality	52SiCrNi5
According to standards	EN 10089: 2002
Number	1.7117

Chemical composition

C%	Si%	Mn%	P% max	S% max	Cr%	Ni%	Deviations allowed for analysis product
0,49-0,56	1,20-1,50	0,70-1,00	0,025	0,025	0,70-1,00	0,50-0,70	
± 0.02	± 0.05	± 0.04	+ 0.005	+ 0.005	± 0.05	± 0.02	

Other elements not mentioned above should not be added to the steel, except for those necessary to casting. Cu + 10Sn ≤ 0,60

Temperature °C

Hot-forming	Normalizing	Quenching on spring	Tempering	Hot moulding of springs	
1100-900	870 air	840-870 oil or polymer	400-450 air	920-830	
Soft annealing	Isothermal annealing	Natural state	End quench hardability test	Pre-heating welding	Stress-relieving after welding
680 air (HB max 248)	820 furnace cooling to 720, then air (HB max 230)	(HB max 310)	850 water	Ac1 760	Ac3 810 Ms 270 Mf 50 not allowed

Mechanical and physical properties

Hot-rolled mechanical properties obtained on test blanks after quenching at 860 °C in oil and tempering at 450 °C in air
EN 10089: 2002

size mm	Testing at room temperature (longitudinal)						
	R N/mm ²	Rp 0.2 N/mm ² min.	A% min.	C% min	KU J min	HB for information	HRC
10	1450-1750	1300	6	35	10	409-482	44-50

Table of tempering values obtained at room temperature on round of Ø 10 mm after quenching at 850 °C in oil

	50	100	150	200	250	300	350	400	450	500	550	600	650	700
HB	706	688	654	615	615	595	577	525	482	421	381	353	319	279
HRC	63	62	60	58	58	57	56	53	50	45	41	38	34	29
R N/mm ²				2340	2310	2250	2170	1950	1690	1480	1310	1190	1060	940
Rp 0.2 N/mm ²				1900	2000	2050	1990	1750	1550	1350	1190	1020	880	750
A %							3.0	8.0	9.8	10.6	12.2	14.0	17.0	21.0
Kv J				8	8	8	9	14	26	26	26	28	42	80

EN 10089: 2002 Jominy test HRC grain size 5 min.

mm distance from quenched extremity	1.5	3	5	7	9	11	13	15	20	25	30	35	40	45	50	H
min	56	56	55	55	54	53	52	51	47	42	38	35	33	31	30	normal
max	63	63	63	62	62	62	61	61	60	59	57	56	54	52	49	

Max thickness and diameter recommended for the spring to obtain, after quenching, internal hardness of 52 HRC	Flat products thickness mm	Round products Ø mm	Mod. of elasticity +20 °C GPa	
			E long.	G tang.
	40	60	220	88

EUROPE EN	ITALY UNI	CHINA GB	GERMANY DIN	FRANCE AFNOR	U.K. B.S.	RUSSIA GOST	USA AISI/SAE
52SiCrNi5	52SiCrNi5	ZG50CrMo	52SiCrNi5	52SiCrNi5		52XHC	