

<b>Quality</b>	<b>54SiCr6</b>	<b>Spring Steel</b>	<i>Technical card</i>			
According to standards	<b>EN 10089: 2002</b>		<i>Lucifin Group</i>			
Number	<b>1.7102</b>		<i>rev. 2018</i>			

### Chemical composition

C%	Si%	Mn%	P% max	S% max	Cr%	
0,51-0,59 ± 0.03	1,20-1,60 ± 0.05	0,50-0,80 ± 0.04	0,025 + 0.005	0,025 + 0.005	0,50-0,80 ± 0.05	Product deviations are allowed
Other elements not mentioned above should not be added to the steel, except for those necessary to casting. Cu + 10Sn ≤ 0,60						

### Temperatur °C

Hot-forming	Normalizing +N	Quenching +Q on spring	Tempering +T	Hot moulding of springs			
1150-850	860-890 air	840-880 oil or polymer	380-500 air	930-840			
Soft annealing +A	Spheroidized annealing +AC	Natural state +U	End quench hardenability	Pre-heating welding	Stress-relieving after welding		
670-720 air (HB max 248)	810-830 furnace cooling to 720, pause, then air (HB max 230)	- (HB max 310)	8560 water	not allowed			
				<b>Ac1</b> 765	<b>Ac3</b> 860	<b>Ms</b> 280	<b>Mf</b> 60

### Mechanical 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)						
	<b>R</b> N/mm <sup>2</sup>	<b>Rp 0.2</b> N/mm <sup>2</sup> min.	<b>A%</b> min.	<b>Z%</b> min.	<b>KU</b> J min.	<b>HB</b> <i>for information</i>	<b>HRC</b>
10	1450-1750	1300	6	25	8	415-480	44.5-50

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

<b>HB</b>	543	455	409	375	344
<b>HRC</b>	54	48	44	40.5	37
<b>R</b> N/mm <sup>2</sup>	2010	1660	14320	1280	1140
<b>Rp 0.2</b> N/mm <sup>2</sup>	1700	1440	1250	1100	1000
<b>A</b> %	5	6	6.5	6.5	7
<b>Kv</b> J	8	10	12	14	16
Tempering at °C	<b>400</b>	<b>450</b>	<b>500</b>	<b>550</b>	<b>600</b>

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

mm distance from quenched end		1.5	3	5	7	9	11	13	15	20	25	30	35	40	45	50	
<b>min</b>		57	56	55	50	44	40	37	35	32	30	28	26	25	24	24	Type H
<b>max</b>		67	66	66	65	65	64	64	63	59	55	49	44	40	37	35	H
<b>min</b>		60	59	59	55	51	48	46	44	41	38	35	32	30	28	28	Type HH
<b>max</b>		67	66	66	65	65	64	64	63	59	55	49	44	40	37	35	HH

Max thickness and diameter recommended for the spring to obtain, after quenching, internal hardness of <b>52 HRC</b> and 80% martensite	Flats mm	Rounds mm	Max thickness and diameter recommended for the spring to obtain, after quenching, internal hardness of <b>55 HRC</b> and 90% martensite	Flats mm	Rounds mm
	9	13		7	10

<b>Mod. of Elasticity</b> long.	GPa	206
<b>Mod. of Elasticity</b> tang.	GPa	79
<b>Specific Heat Capacity</b>	J/(Kg•K)	
<b>Density</b>	Kg/dm <sup>3</sup>	7.80
<b>°C</b>		<b>20</b>

EUROPE	ITALY	CHINA	GERMANY	FRANCE	U.K.	RUSSIA	USA
EN	UNI	GB	DIN	AFNOR	B.S.	GOST	AISI/SAE
54SiCr6	54SiCr6		1.7102	54SiCr6	685 A 57	60S2ChA	9254 ~