Quality	**56Si7**	**Spring Steel**	*Technical card*
According to standards	**EN 10089: 2002**		***Lucefin Group***
Number	**1.5026**		*rev. 2018*

Chemical composition

C%	**Si%**	**Mn%**	**P%** max	**S%** max	
0,52-0,60	1,60-2,00	0,60-0,90	0,025	0,025	Product deviations are allowed
± 0.03	± 0.05	± 0.04	+ 0.005	+ 0.005	

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

Temperature °C

Hot-forming	**Normalizing +N**	**Quenching +Q** on spring	**Tempering +T**	**Hot moulding** of springs
1050-850	870 air	840-870 oil or polymer	400-480 air	900-820

Soft annealing +A	**Spheroidize annealing +AC**	**Natural state +U**	**End quench hardenability 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 293)	850 water	not allowed			
				Ac_1	**Ac_3**	**Ms**	**Mf**
				770	810	290	70

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							Values for **springs** according to Stahlschlűssel 2007 standard				
size mm	Testing at room temperature (longitudinal)										
	R	**Rp** 0.2	**A%**	**Z%**	**KU**	***HRC***	**R**	**Rp** 0.2		**A%**	**DVM**
	N/mm²	N/mm² min.	min.	min	J min		N/mm²	N/mm² min		min	J min
10	1450-1750	1300	6	25	13	*44-50*	1300-1500	1100		6	14

Table of tempering values obtained at room temperature on round of Ø 10 mm after quenching at 860 °C in oil

HB		722	706	688	634	-	-	615	525	448	404	362	327	290	264
HRC		64	63	62	59	-	-	58	53	47.5	43.5	39	35	30.5	27
R	N/mm²	-	-	-	2400	2460	2450	2310	1950	1600	1400	1210	1080	960	880
Rp 0.2	N/mm²	1580	1670	1860	2000	2100	2140	2090	1700	1460	1250	1070	930	800	690
A	%	-	-	-	2.0	3.8	4.2	5.0	8.0	10.5	12.2	13.4	15.8	19.2	22.0
Kv	J	-	-	8	8	9	10	12	16	26	26	28	32	40	42
Tempering at	**°C**	**50**	**100**	**150**	**200**	**250**	**300**	**350**	**400**	**450**	**500**	**550**	**600**	**650**	**700**

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**	Type **H**
min	57	55	49	43	37	34	32	31	28	27	26	26	25	25	24	
max	65	62	60	57	54	50	46	42	39	37	36	35	34	34	33	

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
	8	12

Thermal Expansion	$10^{-6} \bullet K^{-1}$	►	11.5
Mod. of Elasticity long.	GPa	206	
Mod. of Elasticity tang.	GPa	79	
Specific Heat Capacity	J/(Kg•K)	477	
Thermal Conductivity	W/(m•K)	16	
Density	Kg/dm³	7.87	
Specific Electric Resistivity	Ohm•mm²/m	0.7	
Electrical Conductivity	Siemens•m/mm²	1.43	
°C		**20**	**100**

The symbol ► indicates temperature between 20 °C and 100 °C,

EUROPE	**ITALY**	**CHINA**	**GERMANY**	**FRANCE**	**U.K.**	**RUSSIA**	**USA**
EN	UNI	GB	DIN	AFNOR	B.S.	GOST	AISI/SAE
56Si7	55Si7	55Si2Mn	55Si7	55S7	251°58	55S2	9555