

Quality	46CrSiMoV7	Supply conditions:	<i>Technical card</i>
According to standards	Werkstoff	Annealed HB max 230	Lucefin Group
Number	1.2329		rev. 2018

Chemical composition

C%	Si%	Mn%	P% max	S% max	Cr%	Mo%	Ni%	V%	Cu% max
0,43-0,48	0,60-0,75	0,65-0,85	0,025	0,025	1,65-1,85	0,25-0,35	0,45-0,60	0,17-0,22	0,30

Temperature in °C

Hot-forming	Stress-relieving must be done after machining and before quenching +SR	Preheating	Quenching +Q	Tempering immediately after quenching +T
1100-900	550-600 furnace cooling	550, pause, then ▲	▲ 870-890 oil, polymer or salt bath	see table of tempering minimum 2 cycles
Soft annealing +A	Stress-relieving 50 under the temperature of tempering +SR	Pre-heating welding	Stress-relieving after welding	
780-800 furnace 20 °C/h to 600 after air (HB max 230)	550-600 furnace cooling 20 °C/h to 200 after air	250-300	Ac1	Ac3
			770	810
			Ms	Mf
			220	20

the symbol ▲ indicates the temperature rise to°C ▲

Mechanical properties

Heat treatment: quenching at 870 °C in oil, tempering at 560°C. For information

R	N/mm ²	1430	1080	1000	900	800	440
Rp 0.2	N/mm ²	1250	850	780	680	530	270
Test at	°C	20	400	450	500	550	600

Tempering table values at room temperature after quenching at 870 °C in oil

HB	525	512	504	496	482	468	432	371	294
HRC	53	52	51.5	51	50	49	46	40	31
R N/mm ²	1950	1880	1850	1820	1760	1700	1520	1250	970
Tempering at °C	250	300	350	400	450	500	550	600	650

Thermal expansion	10 ⁻⁶ · K ⁻¹					13.2		14.5	
Modulus of elasticity long.	GPa			210		186		179	
Modulus of elasticity tang.	GPa			81		71		69	
Specific heat capacity	J/(Kg·K)			460					
Thermal conductivity	W/(m·K)			27.0		29.1		32.4	
Density	Kg/dm ³			7.85					
Specific electric resist.	Ohm·mm ² /m			0.30					
Electrical conductivity	Siemens·m/mm ²			3.33					
°C				20		400		600	

The symbol ► indicates temperature between 20 °C and 400 °C, 20 °C and 600 °C

Europe EN	Germany DIN	China GB	Japan JIS	India IS	R. of Korea KS	Russia GOST	USA AISI/SAE
	46CrSiMoV7						

Alloyed tool steel subject to high working temperatures

- high resistance to thermal shock and heat cracking
- good mechanical characteristics in hot and cold condition
- good toughness in hot condition
- the high micro-purity and structural homogeneity levels give this grade good suitability to polishing and photo-engraving
- good suitability for welding operations
- applications: *dies subject to low pressure, mantle, extrusion press blocks, punches, dies and sleeves for extrusion presses*