

Quality	45NiCrMo16	Supply conditions:	<i>Technical card</i>
According to standards	EN ISO 4957 : 2002	Annealed	<i>Lucefin Group</i>
Number	1.2767		

Chemical composition

C%	Si%	Mn%	P% max	S% max	Cr%	Mo%	Ni%
0,40-0,50	0,10-0,40	0,20-0,50	0,030	0,030	1,20-1,50	0,15-0,35	3,80-4,30
± 0.03	± 0.03	± 0.04	+ 0.005	+ 0.005	± 0.07	± 0.03	± 0.07

Product deviations are allowed

Temperature °C

Hot-forming	Quenching	Tempering	Stress-relieving annealing ¹⁾	¹⁾ stress-relieving must be done after machining and before quenching
1050-850	heating up to 680, pause, then 840-870 oil, polymer (HRC 54-58) forced air (HRC 53-57)	immediately after quenching 200-600 air minimum 2 cycles	630 furnace cooling to 350, then air	
Soft annealing	Stress-relieving	Pre-heating welding	Stress-relieving after welding	
630-650 air (HB max 285)	50° under the temperature of tempering	350	550 furnace cooling	
		Ac1	Ac3	Ms
		640	740	250
				Mf
				30

Mechanical properties

Tempering table values at room temperature on Ø 25 mm after quenching at 880 °C in oil												
HB	577	577	560	543	512	482	455	432	409	390	371	353
HRC	56	56	55	54	52	50	48	46	44	42	40	38
N/mm ²	2160	2160	2070	2010	1880	1760	1640	1520	1430	1340	1250	1180
Tempering at °C	50	100	150	200	250	300	350	400	450	500	550	600
Thermal expansion	10 ⁻⁶ · K ⁻¹			11.7	12.5	13.0	13.4	13.7	13.8			
Modulus of elasticity	long.	GPa		210								
Modulus of elasticity	tang.	GPa		80								
Testing at	°C			20	100	200	300	400	500	600		
Specific heat capacity	Density	Thermal conductivity			Specific electric resist.			Electrical conductivity				
J/(Kg·K)	Kg/dm ³	W/(m·K)			Ohm·mm ² /m			Siemens·m/mm ²				
460	7.85	28			0.30			3.33				

Steel for medium and large-sized moulds

- high hardenability also for large dimensions
- it is supplied in the annealed condition to facilitate engraving before the quenching and tempering
- self-hardening steel, good toughness
- during heat treatment it is little sensitive to deformations
- applications: *plastic moulds, punches, rolls for hot-workings, bending tools, shears for sheets, molds for hot coining*