

Quality	40CrMnMoS8-6	Supply conditions:
According to standards	DIN 17350: 1980	Quenched and Tempered
Number	1.2312	

Chemical composition

C%	Si%	Mn%	P% max	S%	Cr%	Mo%
0,35-0,45	0,30-0,50	1,40-1,60	0,030	0,05-0,10	1,80-2,00	0,15-0,25
± 0.03	± 0.03	± 0.08	+ 0.005	± 0.01	± 0.07	± 0.04

Product deviations are allowed

Temperature °C

Hot-forming	Normalizing	Quenching	Quenching	Tempering
1050-850	850-900 air	840-860 oil or polymer	860-880 calm or forced air	600-680 calm air minimum 2 cycles
Soft annealing	Stress-relieving		Pre-heating welding	
700-740 furnace cooling max 20 °C/h to 600, then air (HB max 230)	50 under the temperature of tempering		250-300	
			Ac1	Ac3
			760	800
			Ms	Mf
			260	140
			Stress-relieving after welding	
			600 furnace cooling	

Mechanical properties

Heat treatment: quenching at 860 °C in oil, tempering at 600 °C

	N/mm ²		Kv longitudinal J							HB at the depth mm					
R	1000	890	16	20	30	40	50	60	78	340	336	330	327	318	HB
Rp 0.2	880	750								100	150	200	250	300	mm
Test at °C	20	200	0	20	40	60	80	100	120						

Tempering table values at room temperature on round of Ø 25 mm after quenching at 860 °C in oil

HB	543	525	520	512	496	482	468	450	432	400	371	336	301	286	
HRC	54	53	52.5	52	51	50	49	47.5	46	43	40	36	32	30	
R	N/mm ²	2010	1950	1900	1880	1820	1760	1700	1600	1520	1390	1250	1110	1010	950
Kv +20	J						9	9	9	8	9	14	20	30	
Tempering at °C	50	100	150	200	250	300	350	400	450	500	550	600	650	700	

Thermal expansion	10 ⁻⁶ · K ⁻¹		12.8	13.0	13.8	14.0	14.2	14.4	14.5		
Modulus of elasticity	long.	GPa	210		196		177				
Modulus of elasticity	tang.	GPa	81		75		68				
Testing at	°C		20	100	200	250	300	400	500	600	700

Specific heat capacity	Density	Thermal conductivity W/(m·K)			Specific electric resist.	Electrical conductivity
J/(Kg·K)	Kg/dm ³	20 °C	250 °C	500 °C	Ohm·mm ² /m	Siemens·m/mm ²
460	7.85	34.0	33.4	33.0	0.19	5.26

Tool steel for plastic moulding and extrusion

- it is obtained through a special production process which allows a high level of micro-purity
- high level of machinability
- good suitability for nitriding, good wear resistance
- applications: *small and medium-sized moulds for the automotive and food industry, moulds for rubber pressing, pressure moulds for thermosetting compounds (SMC Sheet Moulding Compound, BMC Bulk Moulding Compound), bolsters, moulds for coining*
- extrusion: *dies and gauges for PVC, mechanical parts for extrusion presses*