

Quality	40CrMoV4-6	<i>Technical card</i>
According to standard	EN 10269: 2001	<i>Lucefin Group</i>
Number	1.7711	

Chemical composition

C%	Si% max	Mn%	P% max	S% max	Cr%	Mo%	V%	Al ^{tot} max	Product deviations are allowed
0,36-0,44 ± 0.02	0,40 ± 0.03	0,45-0,85 ± 0.04	0,030 + 0.005	0,030 + 0.005	0,90-1,20 ± 0.05	0,50-0,65 ± 0.03	0,25-0,35 ± 0.03	0,015 ± 0.01	

Temperature °C

Hot-forming	Normalizing	Quenching	Tempering	Stress-relieving	Natural state +U
1100-950	880-900 air	900-930 oil or polymer	650-720 air	50 under the temp. of tempering	(HB max 350)
Soft annealing	Isothermal annealing	Annealing	Quenching and stress-relieving	Pre-heating welding	Stress-relieving after welding
680-730 air (HB max 241)	880 furnace cooling to 730, then air	830 slow furnace cooling (HB 220)	930 oil 200 air (HRC ~ 54)	300 Ac1 Ac3 760 870	560 furnace cooling Ms Mf 340 120

Mechanical properties

Hot-rolled +QT EN 10269: 2001

size mm		Kv and traction test at room temperature in longitudinal											
from	to	R N/mm ²	Rp 0.2 N/mm ² min.	A% min.	C% min.	Kv +20 °C J min.	Kv -40 °C J min.	Kv -100 °C J min.	HB				
100	100	850-1000	700	14	45	30							253-298
100	160	850-1000	640	14	45	25							253-298

+QT = quenched and tempered

Min. prof strength 0.2 % at high temperatures							Rp 0.2 N/mm ² - EN 10269: 2001						
diam.	≤ 100	687	670	647	631	608	593	577	554	523	470	400	293
	100	160	631	612	591	577	556	542	528	507	479	429	366
	°C	50	100	150	200	250	300	350	400	450	500	550	600

Table of tempering values obtained at room temperature on rounds of Ø 40 mm after quenching at 925 °C in oil

HB		525	520	510	485	460	438	430	409	390	360	271
HRC		53	52.5	52	50.5	48.5	46.5	46	44	42	39	28
R	N/mm ²	1950	1920	1860	1780	1660	1550	1500	1430	1360	1200	900
Rp 0.2	N/mm ²	1600	1600	1580	1580	1550	1480	1360	1300	1260	1050	800
A	%	8	8	8	8	8	8.5	9	10	11	13	16
Kv	J	30	30	30	30	30	32	35	40	80	100	150
Tempering at	°C	200	250	300	350	400	450	500	550	600	650	700

Temp.	Mod. of elasticity GPa		Thermal expansion 10 ⁻⁶ .K ⁻¹	Plastic deformations and creep rupture resistance					
	E long.	G tang.		σ ₁ (1%) N/mm ²		σ _R N/mm ²			
Test to °C				°C	10.000 h	100.000 h	10.000 h	100.000 h	200.000 h
20	211	81		450			513	462	446
100	204	78	11.1	460			483	422	400
200	196	75	12.1	470			451	374	347
300	186	71	12.9	480			413	319	286
400	177	68	13.5	490			371	259	229
450				500			321	210	187
500	164	63	13.9	510			269	174	155
550				520			223	146	130
600	127	49	14.1	530			187	122	103
700			14.5	540			160		

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

EUROPE EN	ITALY UNI	CHINA GB	GERMANY DIN	FRANCE AFNOR	U.K. B.S.	RUSSIA GOST	USA AISI/SAE
40CrMoV4-6	40CrMoV4-6		40CrMoV4-6	40CrMoV4-6	670-860		A193B16