

TECHNICAL DATA SHEET

Steel Grade: 42CrMo4
 (EN 10083-3 – Quenched and Tempered Alloy Steel)

General Description

42CrMo4 is a high-strength, low-alloy steel with excellent hardenability, fatigue resistance, and toughness, making it ideal for highly stressed mechanical parts. It is widely used in the quenched and tempered (QT) condition for manufacturing shafts, axles, gears, and forged components subjected to heavy dynamic and impact loads.

CHEMICAL COMPOSITION

C%	Si% max	Mn%	P% max	S% max	Cr%	Mo%	Ni%
0.38-0.45	0.40	0.60-0.90	0.025	0.035	0.90-1.20	0.15-0.30	
± 0.02	± 0.03	± 0.04	+ 0.005	+ 0.005	0.90-1.20	0.15-0.30	

42CrMoS4 n° 1.7227 S% 0.020-0.040 Permissible deviations on the product ± 0.005%.
 Calcium (Ca) treatment may be supplied an request

MECHANICAL PROPERTIES

Hot-formed - hot-rolled- rod mechanical properties for quenched and tempered condition EN 10083-3: 2006

Ø (mm) from - to	thickness (mm) from - to	R * N/mm2 min	Rp 0.2 N/mm2 min	A% min	C% min	Kv Jmin	HB referece only
to 16	to 8	1100-1300	900	10	40		331-380
16 - 40	8 - 20	1000-1200	750	11	45	35	298-359
40 - 100	20 - 60	900-1000	650	12	50	35	271-298
100 - 160	60 - 100	800-950	550	13	50	35	240-286
160 - 250	100 - 160	750-900	500	14	55	35	225-271

(*) Testing at room temperature (longitudinal)

Table of tempering values at room temperature for round Ø 10 mm after guenching at 850°C in oil

HB	HRC	R N/mm ²	Rp 0.2 N/mm ²	A %	Kv J	Tempering at °C
595	57	2200	1520		24	100
586	56.5	2180	1600	7.0	27	150
550	54.5	2030	1620	9.5	28	200
518	52.5	1910	1590	10.0	27	250
496	51	1800	1560	10.0	26	300
468	49	1700	1510	10.0	10.0	350
442	47	1590	1440	10.4	26	400
421	45	1480	1340	11.0	27	450
390	42	1350	1230	12.0	31	500
362	39	1220	1110	13.5	42	550
336	36	1100	1000	15.8	75	600
294	31	980	870	19.0	114	650
264	27	880	710	21.5	135	700

(*) Testing at room temperature (longitudinal)

Physical Properties

- **Density:** 7.85 g/cm³
- **Modulus of Elasticity:** ~210 GPa
- **Thermal Conductivity:** ~42 W/m·K
- **Specific Heat Capacity:** ~460 J/kg·K

Standards and Equivalents

- **EN:** 42CrMo4 (1.7225)
- **AISI/SAE:** 4140
- **DIN:** 42CrMo4
- **AFNOR:** 42CD4
- **ISO:** 42CrMo4