

Material Grade: 42CrMo4 (1.7225)

Other Variant(s): 42CrMoS4 (1.7227) – identical to 42CrMo4, except for S% 0.020-0.040
This variant is only applicable to rolled bar standards.

Associated standards:¹

- BS EN ISO 683-2:2018 (current)
- EN10083-3 (obsolete, all editions)
- BS EN ISO683-7: 2024 (current)
- ISO 683-18:2014 (current)
- BS EN 10277:2018 (current)
- BS EN 10250-3: 2022 (current)

Material Condition(s):

- No designation or +U – Untreated (as rolled)
- +S – With improved shearability
- +A – Soft annealed
- +QT – Quench and tempered

Surface Finish:

- No designation or +HW – Black rolled
- +RM – Rough machined – rough machined rolled or forged
- +SH – Untreated and peeled/ turned (rolled bar)
- +C – Cold drawn
- +G – Ground

Typical tolerance(s):

Surface finish	Product type	Standard	Dimensional tolerance	Straightness	Clean-up
No designation/ +HW	Rolled bar	BS EN ISO683-2	EN10060	EN10060	ISO9443 Class A
+RM	Rolled bar + rough machined	BS EN ISO683-2	EN10060	EN10060	ISO9443 Class A
+SH, +C, +G	Rolled bright bar	BS EN ISO683-7	Defined in 683-7	Defined in 683-7	Defined in 683-7
Any designation	Forged bar	BS EN10250-3	Per agreement	Per agreement	Per agreement

Other supply options: *(only applicable to rolled bar standards)*

- +H - with an additional hardenability test
- +HH - with an additional hardenability test (narrowed upper limit values as per standard)
- +HL - with an additional hardenability test (narrowed lower limit values as per standard)

1. TYPICAL CHEMICAL COMPOSITION *(from the most current version of the standard(s))*

%	<u>C</u>	<u>Si</u>	<u>Mn</u>	<u>P</u>	<u>S</u>	<u>Cr</u>	<u>Mo</u>	<u>Ni</u>	<u>Cu</u>
Min	0.38	0.1	0.6	0	0	0.9	0.15	0	0
Max	0.45	0.4	0.9	0.025	0.035	1.2	0.3	0	0.4

2. TYPICAL MECHANICAL PROPERTIES (from the most current version of the standard(s))

Test type				Tensile and hardness test (at room temperature)						Impact test (KCV)
				Yield (Re)	0.2 % proof	UTS (Rm)	Elong (A)	R of A (Z)	Hardness	Average of 3 / individual value
Condition	Nominal diameter <i>d</i> (mm)	Direction	Unit	N/mm2	N/mm2	N/mm2	%	%	HB	Room Temp
BLACK ROLLED	Untreated (No designation or +U)	-	Min	-	-	-	-	-	-	-
			Max	-	-	-	-	-	-	-
	With improved shearability +S	-	Min	-	-	-	-	-	-	-
			Max	-	-	-	-	-	255	-
	Soft Annealed +A	-	Min	-	-	-	-	-	-	-
			Max	-	-	-	-	-	241	-
	Quench and tempered +QT	≤ 16 ∅	Min	-	900	1100	10	40	-	-
			Max	-	-	1300	-	-	-	-
	Quench and tempered +QT	16<d≤ 40 ∅	Min	-	750	1000	11	45	-	35/24.5
			Max	-	-	1200	-	-	-	-
	Quench and tempered +QT	40<d≤ 100 ∅	Min	-	650	900	12	50	-	35/24.5
			Max	-	-	1100	-	-	-	-
	Quench and tempered +QT	100<d≤ 160 ∅	Min	-	550	800	13	50	-	35/24.5
			Max	-	-	950	-	-	-	-
	Quench and tempered +QT	160<d≤ 250 ∅	Min	-	500	750	14	55	-	35/24.5
			Max	-	-	900	-	-	-	-
BRIGHT ROLLED	Annealed, then peeled/turned +A+SH	16< d ≤ 100	Min	-	-	-	-	-	-	-
			Max	-	-	-	-	-	241	-
	Annealed, then cold drawn +A+C	5< d ≤ 10	Min	-	-	-	-	-	-	-
			Max	-	-	-	-	-	300	-
	Annealed, then cold drawn +A+C	10< d ≤ 16	Min	-	-	-	-	-	-	-
			Max	-	-	-	-	-	290	-
	Annealed, then cold drawn +A+C	16< d ≤ 40	Min	-	-	-	-	-	-	-
			Max	-	-	-	-	-	285	-
	Annealed, then cold drawn +A+C	40< d ≤ 100	Min	-	-	-	-	-	-	-
			Max	-	-	-	-	-	280	-
	Quench and tempered, then peeled/turned +QT+SH	16< d ≤ 40	Min	-	750	1000	11	-	-	35/24.5
			Max	-	-	1200	-	-	-	-
	Quench and tempered, then peeled/turned +QT+SH	40< d ≤ 100	Min	-	650	900	12	-	-	35/24.5
			Max	-	-	1100	-	-	-	-
	Quench and tempered, then cold drawn +QT+C	5< d ≤ 16	Min	-	770	1000	8	-	-	-
			Max	-	-	1200	-	-	-	-
FORGED	Quench and tempered +QT	d<160 ∅	Min	500	-	750	14	-	-	30/21
			Max	-	-	-	-	-	-	-
	Quench and tempered +QT	160≤d≤ 240 ∅	Min	500	-	750	10	-	-	16/11.2
			Max	-	-	-	-	-	-	-
	Quench and tempered +QT	240<d≤ 495 ∅	Min	460	-	700	11	-	-	14/9.8
			Max	-	-	-	-	-	-	-
	Quench and tempered +QT	495<d≤ 750 ∅	Min	390	-	600	12	-	-	12/10.8
			Max	-	-	-	-	-	-	-

¹ valid at the time of writing.

Whilst great care and attention has been paid to compose this datasheet but we will not take the responsibility for any errors.