

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>Cu</u>
Min	0.38	0.1	0.6	0	0	0.9	0.15	0
Max	0.45	0.4	0.9	0.025	0.035	1.2	0.3	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) Average of 3 / individual value
				Yield (Re)	0.2 % proof	UTS (Rm)	Elong (A)	R of A (Z)	Hardness	Room Temp
Condition	Nominal diameter d (mm)	Direction	Unit	N/mm ²	N/mm ²	N/mm ²	%	%	HB	J
BLACKROLLED	Untreated (No designation or +U)	-	Min	-	-	-	-	-	-	-
			Max	-	-	-	-	-	-	-
	With improved shearability +S	-	Min	-	-	-	-	-	-	-
			Max	-	-	-	-	-	255	-
	Soft Annealed +A	-	Min	-	-	-	-	-	-	-
			Max	-	-	-	-	-	241	-
	Quench and tempered +QT	$\leq 16 \approx$	Min	-	900	1100	10	40	-	-
			Max	-	-	1300	-	-	-	-
	Quench and tempered +QT	$16 < d \leq 40 \approx$	Min	-	750	1000	11	45	-	35/24.5
			Max	-	-	1200	-	-	-	-
	Quench and tempered +QT	$40 < d \leq 100 \approx$	Min	-	650	900	12	50	-	35/24.5
			Max	-	-	1100	-	-	-	-
	Quench and tempered +QT	$100 < d \leq 160 \approx$	Min	-	550	800	13	50	-	35/24.5
			Max	-	-	950	-	-	-	-
	Quench and tempered +QT	$160 < d \leq 250 \approx$	Min	-	500	750	14	55	-	35/24.5
			Max	-	-	900	-	-	-	-
BRIGHTROLLED	Annealed, then peeled/turned +A+SH	$16 < d \leq 100$	Min	-	-	-	-	-	-	-
			Max	-	-	-	-	-	241	-
	Annealed, then cold drawn +A+C	$5 < d \leq 10$	Min	-	-	-	-	-	-	-
			Max	-	-	-	-	-	300	-
	Annealed, then cold drawn +A+C	$10 < d \leq 16$	Min	-	-	-	-	-	-	-
			Max	-	-	-	-	-	290	-
	Annealed, then cold drawn +A+C	$16 < d \leq 40$	Min	-	-	-	-	-	-	-
			Max	-	-	-	-	-	285	-
	Annealed, then cold drawn +A+C	$40 < d \leq 100$	Min	-	-	-	-	-	-	-
			Max	-	-	-	-	-	280	-
	Quench and tempered, then peeled/turned +QT+SH	$16 < d \leq 40$	Min	-	750	1000	11	-	-	35/24.5
			Max	-	-	1200	-	-	-	-
	Quench and tempered, then peeled/turned +QT+SH	$40 < d \leq 100$	Min	-	650	900	12	-	-	35/24.5
			Max	-	-	1100	-	-	-	-
	Quench and tempered, then cold drawn +QT+C	$5 < d \leq 16$	Min	-	770	1000	8	-	-	-
			Max	-	-	1200	-	-	-	-
FORGED	Quench and tempered +QT	$d < 160 \approx$	Min	500	-	750	14	-	-	30/21
			Max	-	-	-	-	-	-	-
	Quench and tempered +QT	$160 \leq d \leq 240 \approx$	Min	500	-	750	10	-	-	16/11.2
			Max	-	-	-	-	-	-	-
	Quench and tempered +QT	$240 < d \leq 495 \approx$	Min	460	-	700	11	-	-	14/9.8
			Max	-	-	-	-	-	-	-
	Quench and tempered +QT	$495 < d \leq 750 \approx$	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.