

Material Grade: 20MnCr5 (1.7147)

Other Variant(s): 20MnCrS5 (1.7149)– identical to 20MnCr5, except for S% 0.020-0.040
This variant is only applicable to rolled bar standards.

Associated standards:¹
BS EN ISO 683-3:2019 (current)
EN10084 (obsolete, all editions)
BS EN ISO683-7: 2024 (current)
ISO 683-18:2014 (current)
BS EN 10277:2018 (current)

Material Condition(s): No designation or +U – Untreated (as rolled)
+A – Soft annealed
+S – With improved shearability
+TH – Treated to a hardness range
+FP – Treated to Ferrite- Pearlite structure
+N – Normalised

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)*

+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	0.17	0.15	1.1	0	0	1	-	-	
Max	0.22	0.4	1.4	0.025	0.035	1.3	-	-	0.4

2. HARDENABILITY BANDS (VARIANT +H)

mm/ HRC	1.5	3	5	7	9	11	13	15	20	25	30	35	40
max	49	49	48	46	43	42	41	39	37	35	34	33	32
min	41	39	36	33	30	28	26	25	23	21	-	-	-

3. 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 d (mm)	Direction	Unit	N/mm2	N/mm2	N/mm2	%	%	HB	Room Temp
BLACKROLLED BAR	Untreated (No designation or +U)	-	-	Min	-	-	-	-	-	-	-
				Max	-	-	-	-	-	-	-
	With improved shearability +S	-	-	Min	-	-	-	-	-	-	-
				Max	-	-	-	-	-	255	-
	Soft Annealed +A	-	-	Min	-	-	-	-	-	-	-
				Max	-	-	-	-	-	217	-
	Treated to hardness range +TH	-	-	Min	-	-	-	-	-	170	-
				Max	-	-	-	-	-	217	-
	Treated to Ferrite-Pearlite structure +FP	-	-	Min	-	-	-	-	-	152	-
				Max	-	-	-	-	-	201	-
	Normalised +N	-	-	Min	-	-	-	-	-	140	-
				Max	-	-	-	-	-	201	-
BRIGHTROLLED BAR	Annealed, then peeled/turned +A+SH	16<d≤100	-	Min	-	-	-	-	-	-	-
				Max	-	-	-	-	-	217	-
	Annealed, then cold drawn +A+C	5<d≤10	-	Min	-	-	-	-	-	-	-
				Max	-	-	-	-	-	270	-
	Annealed, then cold drawn +A+C	10<d≤16	-	Min	-	-	-	-	-	-	-
				Max	-	-	-	-	-	260	-
	Annealed, then cold drawn +A+C	16<d≤40	-	Min	-	-	-	-	-	-	-
				Max	-	-	-	-	-	255	-
	Annealed, then cold drawn +A+C	40<d≤100	-	Min	-	-	-	-	-	-	-
				Max	-	-	-	-	-	250	-
	Treated to Ferrite-Pearlite structure and peeled/turned +FP+SH	16<d≤100	-	Min	-	-	-	-	-	152	-
				Max	-	-	-	-	-	201	-
	Treated to Ferrite-Pearlite structure and drawn +FP+C	16<d≤63	-	Min	-	-	-	-	-	152	-
				Max	-	-	-	-	-	250	-
	Treated to Ferrite-Pearlite structure and drawn +FP+C	63<d≤100	-	Min	-	-	-	-	-	152	-
				Max	-	-	-	-	-	245	-

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.