Material Grade: 31CrMoV9 (1.8519)

Associated standards:[1] BS EN ISO 683-5: 2021 (current)
EN10085 (obsolete, all editions)

Material Condition(s): No designation or +U – Untreated (as rolled)
+A – Soft annealed
+QT – Quench and tempered

Surface Finish: No designation or +HW – Black rolled
+RM – Rough machined
+SH – Untreated and peeled/ turned (rolled bar)

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

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

%	C	Si	Mn	P	S	Cr	Mo	V
Min	0.27	0	0.4	0	0	2.3	0.15	0.1
Max	0.34	0.4	0.7	0.025	0.035	2.7	0.25	0.2

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/mm2*	*N/mm2*	*N/mm2*	*%*	*%*	*HB*	*J*
ROLLED BAR	Untreated (No designation or +U)	-	-	Min	-	-	-	-	-	-	-
				Max	-	-	-	-	-	-	-
	Soft Annealed +A	-	-	Min	-	-	-	-	-	-	-
				Max	-	-	-	-	-	248	-
	Quench and tempered +QT	16<d≤ 40 ⌀	L	Min	900	-	1100	9		-	25/17.5
				Max	-	-	1300	-	-	-	-
	Quench and tempered +QT	40<d≤ 100 ⌀	L	Min	800	-	1000	10		-	30/21
				Max	-	-	1200	-	-	-	-
	Quench and tempered +QT	100<d≤ 160 ⌀	L	Min	700	-	900	11	-	-	35/24.5
				Max	-	-	1100	-	-	-	-
	Quench and tempered +QT	160<d≤ 250 ⌀	L	Min	650	-	850	12	-	-	40/28
				Max	-	-	1050	-	-	-	-

[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.