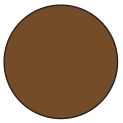
MACSTEEL®

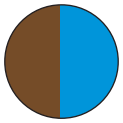
Data Sheet

709M40 | EN19

BROWN:
As roll or as forged black bar



BROWN, BLUE:
Rolled or forged black bar heat treated to condition “T”



(1% CARBON, ¼% MOLY STEEL)
SPECIFICATION - BS 970:Part 1:1983
(Formally known as EN 19 - BS 970:1955)

Chemical composition limits

%	C	Si	Mn	S	P	Cr	Ni	Mo
Min	0.36	0.10	0.70	-	-	0.90	-	-
Max	0.44	0.35	1.00	0.04	0.035	1.20	0.40	0.035

Mechanical properties

Condition	LRS	Hardness	U.T.S.	Y.S.	0.2% P.S.	Elongation	Impact strength
	(mm)	(BHN)	(MPa)	(MPa)	(MPa)	(%)	(J)
Annealed	-	255 max	-	-	-	-	-
Spheroidoze annealed	-	235 max	-	-	-	-	-
R	250	210 - 255	700 - 850	480 min	480 min	15 min	28 min
S	250	223 - 277	775 - 925	540 min	540 min	13 min	22 min
S	150	223 - 277	775 - 925	570 min	570 min	15 min	50 min
T	100	248 - 302	850 - 1000	665 min	665 min	13 min	50 min
U	63	369 - 331	925 - 1075	740 min	740 min	12 min	42 min
V	29	293 - 352	1000 - 1150	835 min	835 min	12 min	42 min
W	19	311 - 375	1075 - 1225	925 min	925 min	12 min	35 min

Heat treatment

- Hardening - re-heat (austenizing) between 860°C and 890°C followed by quenching in oil
- Tempering - generally between 550°C and 700°C
- Where material is above the LRS for a specific heat treatment condition, only the surface hardness will be guaranteed and mechanical properties will be for information only

Condition of delivery

- As-rolled or as-forged - hardness generally should not exceed 321HB, mechanical properties not guaranteed
- Normalized - to BS970:Part 1:1983 requirements or customer requirement as agreed between parties
- Straightness shall not exceed 5mm over any 1000mm unless special straightness is required - not exceeding 2mm over any 1000mm
- Sufficient material must be provided for to ensure all surface related defects are removed
  - 2% of nominal diameter for rolled bar
  - 4% of nominal diamete for forged bar from 90mm up to 220mm diameter
  - 6% of nominal diameter for forged bar over 220mm up to 450mm diameter