

M1020 BRIGHT CARBON STEEL BAR

M1020 is a low carbon mild steel. This bar is supplied in cold drawn or Turned and Polished condition. This bar has excellent weldability, good machinability, reasonable strength and good ductility.

M1020 is used extensively across all industrial sectors and is also suitable for carburizing (case hardening). Due to its low carbon content M1020 is not suitable for Flame or Induction hardening. In a bright finish it is ideally suited for CNC machining, and machining components where much of the length does not require machining.

Stocked Sizes	Round Metric	6 mm – 200 mm Ø
	Round Imperial	3/16" – 8" Ø
	Square Metric	20mm – 75 Sq
	Square Imperial	3/8" – 5" Sq

Closest Related Specifications

Australia	AS 1443 – 2004 M1020
Japan	JIS G4051 S20C
USA	AISI C1020 ASTM A29 – 91 1020 SAE 1020 UNS G10200

Chemical Composition

	Min. %	Max %
Carbon	0.15	0.25
Silicon		0.35
Manganese	0.30	0.90
Phosphorous		0.05
Sulphur		0.05

Typical Mechanical Properties – Cold Drawn & Turned and Polished (For Guidance Only)

	Up to 16mm	17-38mm	39-63mm	Turned & Polished (All Sizes)
Tensile Strength (Mpa)	480-790	460-710	430-660	410-560
Yield Strength (Mpa)	380-610	370-570	340-480	230-330
Elongation in 50mm (%)	10	12	13	22
Hardness (Brinell BHN)	142-235	135-210	120-195	115-170

Standard Bright Tolerance (h11) in mm

3-6mm	+6-10mm	+10-18mm	+18-30mm	+30-50mm	+50-80mm	+80-120mm	+120-180mm	+180-250mm
+0/-0.075	+0/-0.09	+0/-0.11	+0/-0.13	+0/-0.16	+0/-0.19	+0/-0.22	+0/-0.25	+0/-0.29mm

Annealing

Heat to 870-910 Deg C. Hold until temperature is uniform throughout the section and allow to cool in furnace.

Normalizing

Heat to 890- 940 Deg C. Hold until temperature is uniform through the section, soak for 10-15 minutes and allow to cool in still air.

Stress Relieving

Heat to 650-700 Deg C. Hold until temperature is uniform throughout the section, soak for 1 hour per 25mm of section, and cool in still air