

# BRIGHT COMMERCIAL QUALITY MILD STEEL – AISI 1018

**AISI 1018 Commercial Quality Mild Steel, bright drawn or smooth turned, with a good balance of strength, ductility and toughness, excellent weldability, also good formability and machinability.**

### TYPICAL APPLICATIONS:

Axles, bolts, connecting rods, motor shafts, hydraulic shafts, pump shafts, pins, machinery parts etc. Also light duty gears, camshafts, spindles and ratchets etc, when carburised.

### RELATED SPECIFICATIONS:

AS 1443-1994	M1020
BS 970-3-1991	080A15
EN 10277-2	1.0401 C15
JIS G 4051	S15C or S20C
SAE & UNS	1018 & G10180

### TYPICAL CHEMICAL ANALYSIS

Carbon	0.17%
Silicon	0.27%
Manganese	0.80%
Phosphorus	0.050% max
Sulphur	0.050% max

Not suitable for through hardening, flame or induction hardening due to the relatively low carbon content

### SURFACE TREATMENT:

Will **Carburise** or **Carbonitride**  
Typical surface hardness to **HRC 58**.

Not suitable for nitriding.

### TYPICAL SIZE TOLERANCE:

Bright drawn / Smooth turned: **h10**

### PLATING:

Will electroplate but not suitable for hot dip galvanising (unless silicon content is under 0.05%)

### TYPICAL MECHANICAL PROPERTIES – for guidance only

Finish	Yield Strength MPa	Tensile Strength MPa	Elongation %	Hardness HB
Bright Drawn	340 - 600	430 - 750	12 min	120 - 220
Smooth Turned	230 – 330	410 - 560	22 min	120 - 170

Material supplied to chemical analysis only.

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## BRIGHT COMMERCIAL QUALITY MILD STEEL – AISI 1018 continued

### WELDING:

Readily welded by all of the standard welding processes

Welding when carburised or when carbonitrided is not recommended.

### Welding procedure:

Low carbon welding electrodes are recommended. Pre-heat or post-heat not generally required, however, for sections over 50mm pre-heating can be beneficial as can post-weld stress relieving.

Welding details for guidance only

### HEAT TREATMENT:

#### Forging:

Heat to 1150°C – 1280°C

Hold until uniform

Minimum forging temperature 900°C

Air cool on completion

#### Annealing:

Heat to 870°C – 910°C

Cool in furnace

#### Normalising:

Heat to 890°C – 940°C

Cool in still air

#### Stress Relieving:

Heat to 500°C – 700°C

Cool in still air

Heat treatment and Carburising etc, details are for guidance only

#### Carburising:

Carburise at 880°C – 920°C

#### Core Refining (Optional):

Heat to 870°C – 900°C

Quench in water or oil

#### Case Hardening:

Heat to 780°C – 820°C

Quench in water

#### Tempering:

Temper at 150°C – 200°C to improve case toughness with minimal effect on its hardness. This will also reduce the possibility of grinding cracks.

#### Carbonitriding:

Heat to 800°C – 875°C

Quench and Temper as required