

## BRIGHT COMMERCIAL QUALITY MILD STEEL – AISI 1018

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**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 Chemical Analysis

<b>Carbon</b>	<b>0.17%</b>
<b>Silicon</b>	<b>0.27%</b>
<b>Manganese</b>	<b>0.80%</b>
<b>Phosphorus</b>	<b>0.050% max</b>
<b>Sulphur</b>	<b>0.050% max</b>

### 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.

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**.

### 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

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

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

Material supplied to chemical analysis only

**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

**Carburising:**

Carburise at 880°C – 920°C

**Annealing:**

Heat to 870°C – 910°C  
Cool in furnace

**Core Refining (Optional):**

Heat to 870°C – 900°C  
Quench in water or oil

**Normalising:**

Heat to 890°C – 940°C  
Cool in still air

**Case Hardening:**

Heat to 780°C – 820°C  
Quench in water

**Stress Relieving:**

Heat to 500°C – 700°C  
Cool in still air

**Tempering:**

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

Heat Treatment and Carburising etc, details are for guidance only.

**Carbonitriding:**

Heat to 800°C – 875°C  
Quench and Temper as required