

# BS S106 Steel Bar (4S106D)

Smiths Advanced Metals

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## Chromium-Molybdenum Nitriding Steel

Classed as nitriding steel, BS S106 is a British Aerospace Standard aerospace steel alloy grade which contains 3% chromium molybdenum.

Engineering steel EN40B (744M24) is a direct equivalent. The alloy is typically supplied in the hardened, tempered and stress-relieved condition as bright bar, and the material develops a hard casing after heat treatment.

Performance characteristics of the alloy include medium tensile strength, high fatigue strength and excellent wear & abrasion resistance. The material may also be supplied under the Rolls Royce specification (MSRR 6001).

### Manufacture

BS S106 is produced using the air melt or VAR method (vacuum arc remelting). Excellent transverse properties are present after the VAR production process, and the alloy also finds suitability in elevated temperature applications. The product is suitable for applications requiring a combination of wear resistance, fatigue resistance and moderate strength.

### Benefits

- Excellent wear/abrasion resistance
- High hardness after heat treatment
- High fatigue strength



### Key Applications

- Gears
- Crankshafts
- Spindles

### Chemical Composition (weight %)

	C	Si	Mn	P	S	Cr	Mo	Ni	Sn
min.	0.20	0.10	0.40			3.00	0.50		
max.	0.28	0.35	0.70	0.020	0.020	3.50	0.70	0.30	0.030

### Mechanical Properties

Tensile strength MPa	930-1080 MPa
0.2% Proof Stress MPa	740 min
Elongation (%)	13
Hardness - heat treated	269-321 HB
Hardness - soft	269 HB max

### Commercial Engineering

Although BS S106 is an aerospace grade, the alloy is not exclusively used for aerospace applications. The material also finds use in markets such as motorsport and automotive components.

Shafts, spindles, crankshafts and gears are produced utilising this alloy due to the product's performance capabilities which lends itself to numerous engineering applications.

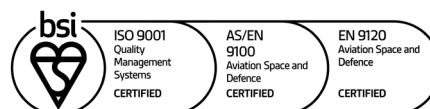
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