Alloy 36 (ASTM F1684)

Smiths Advanced Metals

Alloy 36

A specialised iron-nickel alloy engineered for applications where dimensional stability is critical.

Known for its exceptionally low coefficient of thermal expansion, Alloy 36 maintains consistent size and shape across a broad temperature range, making it the preferred material for precision engineering and thermal stability applications.

Manufactured to internationally recognised standards, including ASTM F1684 and UNS K93603, Alloy 36 is widely specified in industries where even minimal thermal movement can affect performance, alignment, or structural accuracy.

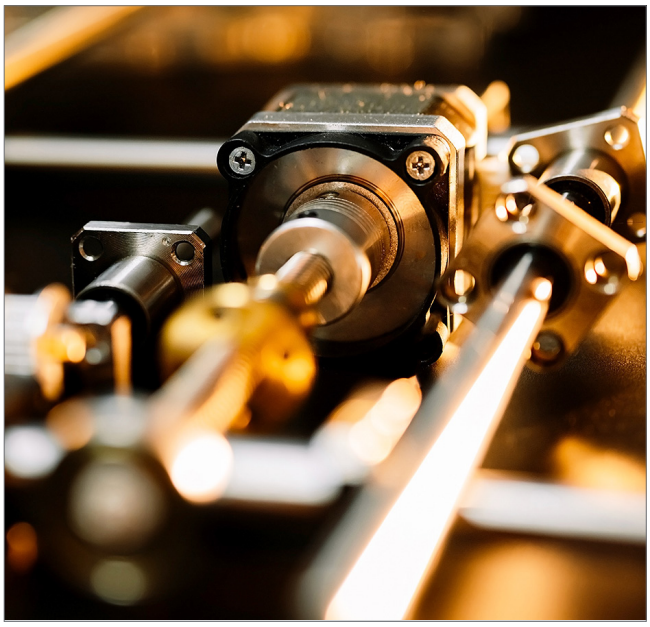
The material is extensively used in aerospace tooling, motorsport composite moulds, laser guide rails, scientific instrumentation, metrology equipment, radio telescopes, and precision measuring systems.

Heat Treatment

Alloy 36 is generally supplied in the fully annealed condition, in accordance with ASTM F1684, ensuring optimum dimensional stability and machinability. Unannealed Alloy 36 bar can also be supplied on request for applications requiring additional fabrication or custom heat treatment.

Stock Availability

We stock Alloy 36 bars in diameters from 12.7mm to 63.5mm.



Grades/Specifications

- ASTM F1684
- UNS K93603
- 1.3912

Benefits

- Very low coefficient of thermal expansion
- Long term material stability
- Reasonable strength and toughness
- Ideal for the manufacture of metallic products requiring tight dimensional consistency up to 200°C

*Chemical Composition (weight, %)

	**Ni	Fe	C	Mn	Si	P	S	P+S	Cr	Co	Al	Mg	Zr	Ti	Al+Mg+Zr+Ti
Min	35	Bal													
Max	37		0.05	0.60	0.40	0.015	0.015	0.025	0.25	0.50	0.10	0.10	0.10	0.10	0.20

*As Per ASTM F1684 **Nickel content is a nominal 36%

Typical Properties	
Density g/cm^3	8.05
Electrical Resistivity Microhm-cm	84
Curie Temperature °C	279

Tensile strength:
Temper Designation A Annealed: 586 MPa max
Temper Designation B Cold Worked 593 MPa min

Coefficient of Thermal Expansion (CTE) :
Temp range 30 to 150°C: 1.2 to 2.7 µm/m.°C average
CTE tested per melt

SMITHS ADVANCED METALS
Unit 5 Percy Road,
Huntingdon,
Cambridgeshire PE29 6SZ
Tel: +44 (0) 1767 604710

bsi ISO 9001 Quality Management Systems CERTIFIED | AS/EN 9100 Aviation Space and Defence CERTIFIED | EN 9120 Aviation Space and Defence CERTIFIED

UKAS TESTING 1930