

SOUTHERLY ALLOY

Inconel 718 Bar and Rod

UNS N07718 | Werkstoff 2.4668 | Nickel-Based Precipitation-Hardening Alloy

1. Product Identification

Item	Specification
Product	Inconel 718 Bar and Rod
Alloy / Grade	Inconel 718
UNS	N07718
Werkstoff	2.4668
Product Type	Bar & Rod
Alloy Family	Nickel-based precipitation-hardening alloy

2. Material Description

Inconel 718 is a nickel-chromium-iron precipitation-hardenable alloy developed for high strength, fatigue resistance and reliable performance in demanding temperature and corrosion environments. Bar and rod products are used where strength and dimensional integrity are required in aerospace, power generation, oil and gas and other industrial applications.

3. Key Characteristics

- High tensile and yield strength after appropriate heat treatment.
- Good fatigue and creep-rupture resistance for demanding service conditions.
- Good oxidation and corrosion resistance at elevated temperatures.
- Suitable for precision-machined components and high-strength fasteners.
- Available in solution-treated and precipitation-hardened conditions according to applicable specifications.

4. Chemical Composition

Element	Requirement, wt.%
Nickel (Ni)	50.00–55.00
Chromium (Cr)	17.00–21.00
Iron (Fe)	Balance
Niobium + Tantalum (Nb + Ta)	4.75–5.50
Molybdenum (Mo)	2.80–3.30
Titanium (Ti)	0.65–1.15
Aluminium (Al)	0.20–0.80
Cobalt (Co)	≤ 1.00
Copper (Cu)	≤ 0.30
Carbon (C)	≤ 0.08
Manganese (Mn)	≤ 0.35

Silicon (Si)	≤ 0.35
Phosphorus (P)	≤ 0.015
Sulfur (S)	≤ 0.015
Boron (B)	0.002–0.006

Composition limits shown per ASTM B637 for UNS N07718; the applicable purchase specification takes precedence.

5. Mechanical Properties

Typical minimum values for the specified high-strength condition are shown below. Final acceptance values depend on the applicable material specification, product size and heat-treatment condition.

Property	Value
Tensile Strength	≥ 185 ksi (1275 MPa)
Yield Strength	≥ 150 ksi (1034 MPa)
Elongation	≥ 12 %
Hardness	≥ 331 HB

6. Applicable Standards

Standard	Application / Reference
ASTM B637	Precipitation-hardenable nickel alloy rod, bar, forgings and forging stock
ASME SB637	ASME specification corresponding to ASTM B637
AMS 5662	Corrosion- and heat-resistant nickel-base alloy bars, forgings and related products; solution heat treated
AMS 5663	Nickel alloy 718 bar/forgings and rings in precipitation-hardened applications

7. Product Forms and Surface Conditions

Category	Available Forms / Conditions
Bar & Rod	Round bar and round rod
Surface	Hot finished, cold drawn, bright finished, ground / precision ground, subject to order requirements
Heat Treatment	Solution treated; solution treated and aged / precipitation hardened, as specified
Dimensions	Standard and custom diameters and lengths subject to specification and production requirements

8. Heat Treatment

Inconel 718 derives its high strength primarily from precipitation hardening. Heat-treatment requirements should be specified according to the applicable ASTM, ASME or AMS material specification and the required delivery condition. The final heat-treatment condition should be stated on the purchase order where required.

9. Manufacturing Process

Typical production may include melting, billet preparation, hot working, solution heat treatment, aging where specified, straightening, machining or drawing, surface finishing, cutting and final inspection. The actual route depends on product size, condition and applicable specification.

10. Quality Assurance & Documentation

- Chemical composition verification against the specified grade.
- Mechanical testing according to the applicable material specification.
- Dimensional and visual inspection before shipment.
- Material Test Certificate available to the agreed inspection level.
- EN 10204 3.1 certificate available; 3.2 documentation can be arranged when required and agreed.

11. Typical Applications

Industry	Typical Uses
Aerospace	Engine and structural components, high-strength rotating or static parts
Gas Turbines / Power	Turbine-related components and high-temperature hardware
Oil & Gas	High-strength components, downhole and wellhead-related applications
Fasteners	High-strength bolts, studs and other demanding fastener applications
Cryogenic Service	Components requiring high strength and reliable low-temperature performance

12. Ordering Information

- Grade: Inconel 718 / UNS N07718
- Standard: ASTM B637, ASME SB637, AMS 5662 or AMS 5663 as required
- Product form: round bar / rod
- Diameter and cut length
- Heat-treatment condition
- Surface finish
- Quantity
- Inspection, testing and certification requirements

13. Technical Notes

This technical data sheet is intended for product identification, technical reference and inquiry preparation. The applicable purchase specification and agreed order requirements take precedence over general product information. Mechanical properties and dimensional limits may vary with product size, heat-treatment condition and the specified standard.

14. Contact

Southerly Alloy Co., Ltd.

Nickel Alloy Bar & Rod Supplier

For quotations, availability, custom dimensions and inspection requirements, please contact Southerly Alloy with the required grade, standard, size, quantity and delivery condition.