

Inconel 718 Datasheet

Inconel 718 is an age-hardened nickel alloy offering high strength and creep resistance for aerospace and high temperature service.

Alloy / Grade	Inconel 718
Common Forms	Round Bar , Flat Bar, Forgings, Sheet, Wire.
Key Feature	Age-hardenable for extreme strength.
Service Focus	Precipitation hardening (aging) treatments result in yield strengths above 150 ksi, maintaining integrity in high-stress environments up to 1300...

1. Product Overview

Inconel 718 is a precipitation-hardenable nickel-chromium alloy. It combines exceptionally high tensile, yield, and creep-rupture strength at temperatures up to 1300 deg F (700 deg C) with excellent weldability, making it the most widely used superalloy in the aerospace industry.

Grade	Core Description	Typical Service Focus
Inconel 718	Inconel 718 is a precipitation-hardenable nickel-chromium alloy. It combines exceptionally high tensile, yield,...	Inconel 718 stands out because it solves the "weldability vs. strength" problem. While most precipitation-...
Supply Capability	Round Bar , Flat Bar, Forgings, Sheet, Wire.	Standard mill forms, cut-to-size material and project supply
Technical Review	Confirm final values by product form, heat treatment and material certificate	Precipitation hardening (aging) treatments result in yield strengths above 150 ksi, maintaining integrity...

2. Key Features

- Inconel 718 stands out because it solves the "weldability vs. strength" problem. While most precipitation-hardened alloys are prone to cracking...
- Precipitation hardening (aging) treatments result in yield strengths above 150 ksi, maintaining integrity in high-stress environments up to 1300...
- Unique chemistry prevents strain-age cracking during welding, allowing for the fabrication of complex structures and repair of engine parts.
- Exhibits outstanding tensile and impact properties even at cryogenic temperatures, making it suitable for liquid hydrogen and oxygen tanks.

Further information under:	https://www.nickelcasting.com/nickel-alloys/inconel-nickel-alloys/inconel-718/
Home page:	www.nickelcasting.com
Email:	ni@Nickelcasting.com

Technical Data

The following values are provided as general reference data for engineering review and procurement planning. Confirm final values against the applicable specification, product form, heat treatment condition and material certificate.

3. Chemical Composition (%)

Element	Content (%)
Nickel (Ni)	50.0 - 55.0
Chromium (Cr)	17.0 - 21.0
Niobium (Nb) + Ta	4.75 - 5.50
Molybdenum (Mo)	2.80 - 3.30
Titanium (Ti)	0.65 - 1.15
Aluminum (Al)	0.20 - 0.80
Iron (Fe)	Balance

4. Standard Specifications

Product Form	Standards (ASTM / AMS / ASME)
Bar, Forgings, Rings	ASTM B637, AMS 5662 (Annealed), AMS 5663 (Aged)
Plate, Sheet, Strip	ASTM B670, AMS 5596
Pipe & Tube	API 6A CRA, AMS 5589

5. Mechanical Properties - Typical at Room Temperature

Property	Typical Values (Room Temp)
Tensile Strength	185 - 210 ksi (1275 - 1450 MPa)
Yield Strength (0.2% Offset)	150 - 180 ksi (1034 - 1240 MPa)
Elongation	12 - 20 %
Hardness (Rockwell C)	36 - 44 HRC

Note: Values are typical or specification reference values. Purchase requirements should be confirmed against the required standard, drawing and material test report.

Applications and Ordering Information

Use this section to define inquiry requirements and accelerate technical confirmation for Inconel 718 products.

6. Typical Applications

Industry / Area	Typical Components
Industrial Service	*Note: These properties reflect material in the fully heat-treated (aged) condition (AMS 5663).
Chemical / Process Equipment	Turbine disks, blades, casings, compressor blades, and shafts exposed to high heat and stress.
Oil, Gas & Marine	High-pressure downhole tools, wellhead components, and safety valves (API 6A CRA 718) requiring high strength.
High-Temperature / Power	Cryogenic tankage, flow components, and high-pressure turbo pumps.
Precision Components	High-strength structural members used in nuclear fuel spacer grids.

7. Available Supply Forms

Pipe & Tube	Plate & Sheet	Bar & Rod
Pipe Fittings	Flanges	Wire & Strip
Forgings	Custom Cutting	Project Supply

8. Information to Include When Requesting a Quote

- Required grade: Inconel 718, with ASTM / ASME / AMS specification if applicable.
- Product form: pipe, tube, plate, sheet, bar, fittings, flanges, forgings or machined parts.
- Dimensions: outside diameter, wall thickness, length, width, thickness or drawing number.
- Quantity, delivery destination and required delivery schedule.
- Special requirements: cutting, machining, heat treatment, NDT, PMI, test report or material certificate.

Company Information	
Address	Shanghai, China
Email	ni@Nickelcasting.com
Home Page	www.nickelcasting.com
Product Page	https://www.nickelcasting.com/nickel-alloys/inconel-nickel-alloys/inconel-718/

Disclaimer

This datasheet is provided for general reference only. Actual values may vary by product form, heat treatment, manufacturing condition and applicable specification. Please contact us for confirmed specifications, test reports and material certificates before ordering.