Inconel 718 Hex Bar (UNS N07718) — Technical Data Sheet

Hex Bar supplied to ASTM B637 / ASME SB637 — values are minimum requirements for the solution-treated and precipitation-hardened condition per the governing specification.

Chemical Composition (ASTM B637)

Element	Content
Nickel (Ni)	50.0–55.0%
Chromium (Cr)	17.0–21.0%
Iron (Fe)	Balance
Niobium + Tantalum (Nb + Ta)	4.75–5.50%
Molybdenum (Mo)	2.80–3.30%
Titanium (Ti)	0.65–1.15%
Aluminum (Al)	0.20–0.80%
Cobalt (Co)	1.00% max.
Carbon (C)	0.08% max.
Manganese (Mn)	0.35% max.
Silicon (Si)	0.35% max.
Phosphorus (P)	0.015% max.
Sulfur (S)	0.015% max.
Copper (Cu)	0.30% max.
Boron (B)	0.002–0.006%

Minimum Room-Temperature Mechanical Properties (Aged)

Condition	Product Size	Tensile Strength	Yield Strength, 0.2% Offset	Elongation	Hardness
Solution Treated + Precipitation Hardened (AMS 5662 / AMS 5663)	Up to 254 mm (10 in.)	≥185 ksi (1276 MPa)	≥150 ksi (1034 MPa)	≥12%	≥331 HB

Physical Properties (Approx., aged)

Property	Value
Alloy	Inconel 718
UNS	N07718
Werkstoff	2.4668
Density	Approx. 8.19 g/cm³
Melting Range	Approx. 1260–1336°C
Alloy Type	Nickel-chromium-iron
Strengthening	Precipitation hardening

Standards and Designations

Standard	Product / Application
ASTM B637	Nickel alloy bar, rod, forgings and forging stock for high-temperature service
ASME SB637	ASME specification for pressure equipment applications
SAE AMS 5662	Nickel alloy 718 bar, forgings and rings, solution heat treated
SAE AMS 5663	Nickel alloy 718 bar, forgings and rings, precipitation heat treatable
UNS N07718	Material designation for Inconel 718
W.Nr. 2.4668	European material number
NACE MR0175	Sour-service qualification for oil and gas equipment

Surface Finishes

Surface Condition	Typical Characteristics / Applications
Hot Finished	Supplied in the as-hot-worked condition; suitable for general industrial applications and subsequent machining
Cold Drawn	Improved dimensional accuracy and surface finish, with increased strength from cold working
Bright Finished	Smooth, bright surface with improved dimensional control; suitable for applications requiring a cleaner surface appearance
Peeled	Machined surface with controlled diameter and improved surface uniformity, typically supplied for further machining
Centerless Ground	Precision-ground surface with close dimensional tolerances and consistent diameter
Polished	Fine surface finish for applications requiring reduced surface roughness

Typical Supply Dimensions — Hex Bar

Product Form	Typical Supply	Length
Hex Bar	12–100 mm A/F	Single Random, Double Random or Custom
Cold-Drawn Hex Bar	12–80 mm A/F	Custom
Bright Hex Bar	12–100 mm A/F	Single Random, Double Random or Custom
Precision Hex Bar	12–60 mm A/F	Custom
Peeled Hex Bar	20–100 mm A/F	Custom
Ground Hex Bar	12–60 mm A/F	Custom
Forged Hex Bar	100–200 mm A/F	Custom
Custom Hex Bar	To drawing	Custom

Values are for reference; the mill test certificate prevails for final acceptance. Dimensions, heat-treatment conditions, and surface finishes are confirmed at quotation.