Inconel 713C Master Alloy Bar (UNS N07713) — Technical Data Sheet

Inconel 713C Master Alloy Bar supplied against the agreed order specification, with SAE AMS 5391 / GB/T 14995 as the chemistry reference.

Chemical Composition (AMS 5391 / K418 window, UNS N07713)

Element	Content
Nickel (Ni)	Balance
Chromium (Cr)	12.0–14.0%
Molybdenum (Mo)	3.8–5.2%
Aluminum (Al)	5.5–6.5%
Niobium + Tantalum (Nb + Ta)	1.8–2.8%
Titanium (Ti)	0.5–1.0%
Carbon (C)	0.08–0.20%
Zirconium (Zr)	0.05–0.15%
Boron (B)	0.005–0.015%
Iron (Fe)	2.50% max.
Silicon (Si)	0.50% max.
Manganese (Mn)	0.25% max.
Copper (Cu)	0.50% max.
Sulfur (S)	0.015% max.
Phosphorus (P)	0.015% max.

Mechanical Properties (Typical, As-Cast Castings)

Product Form	Condition	Tensile Strength	Yield Strength, 0.2% Offset	Elongation	Hardness
Investment castings from compliant heat	As-cast, typical	900–1050 MPa (130–152 ksi)	700–800 MPa (102–116 ksi)	5–10%	33–37 HRC

Physical Properties (Typical)

Property	Value
Alloy	Inconel 713C
UNS	N07713
Werkstoff	2.4671
Density	Approx. 7.9 g/cm³
Melting Range	Approx. 1260–1340 °C
Elastic Modulus	Approx. 200 GPa (room temperature)
Alloy Type	Nickel-chromium-molybdenum-aluminum-titanium
Strengthening	Gamma-prime precipitation, Ni3(Al,Ti)
Magnetic	Non-magnetic (austenitic)

Heat Treatment (Applied to Castings)

Step	Treatment Applied to Castings
Homogenize and solution	Near 1180 to 1220 °C, then air cooled
First age	Around 930 to 950 °C, then air cooled
Second age	Around 760 to 780 °C, then air cooled

Standards and Designations

Standard	Product or Application
SAE AMS 5391	UNS N07713 investment castings, the chemistry reference for the bar
GB/T 14995 / HB 5162	K418 master alloy ingot supply conditions
UNS N07713 · W.Nr. 2.4671 · K418	Material designations

Typical Supply Dimensions — Inconel 713C Master Alloy Bar

Product Form	Typical Supply Range
Master alloy bar	Ø30–200 mm, cut lengths to order
Foundry ingot	Formats sized to crucible and charge weight
Marking	Heat number, alloy and diameter on bar and tag

Surface Finishes

Surface Condition	Typical Use
As-cast skin	Standard remelt surface with casting skin intact.
Peeled	Bright machined surface for clean charging and exact weighing.
Ground	Diameter-corrected rounds for automated charge lines.

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