

Inconel X-750 Centreless-Ground Rod (UNS N07750) — Technical Data Sheet

Centreless-Ground Rod supplied to ASTM B637 / ASME SB637 — values are minimum requirements for the delivered condition per the governing specification.

Chemical Composition (ASTM B637)

Element	Content
Nickel plus Cobalt (Ni + Co)	70.00% min.
Chromium (Cr)	14.00-17.00%
Iron (Fe)	5.00-9.00%
Titanium (Ti)	2.25-2.75%
Aluminum (Al)	0.40-1.00%
Niobium plus Tantalum (Nb + Ta)	0.70-1.20%
Manganese (Mn)	1.00% max.
Silicon (Si)	0.50% max.
Copper (Cu)	0.50% max.
Cobalt (Co)	1.00% max.
Carbon (C)	0.08% max.
Tantalum (Ta)	0.05% max.
Sulfur (S)	0.010% max.

Minimum Room-Temperature Mechanical Properties

Product Form	Condition	Tensile Strength, min.	Yield Strength (0.2%), min.	Elongatio n, min.	Hardness
Bar and rod, ASTM B637 Type 2	Solution treated at 982 °C, aged	>=170 ksi (1170 MPa)	>=115 ksi (790 MPa)	18%	302-363 HB
Bar and rod, ASTM B637 Type 3	Solution treated at 1093 °C, aged	>=160 ksi (1103 MPa)	>=100 ksi (689 MPa)	20%	267-363 HB
Bar and rod, ASTM B637 Type 1	Solution treated at 1149 °C, stabilised, aged	>=140 ksi (965 MPa)	>=90 ksi (620 MPa)	8%	262 HB min.

Delivery Conditions / Heat Treatment

Condition	Typical Treatment
Type 2 (single age)	Solution treated at 982 °C, then aged near 704 °C
Type 3 (single age)	Solution treated at 1093 °C, then aged near 704 °C
Type 1 (stabilised)	Solution treated at 1149 °C, stabilised near 843 °C, then aged
Solution treated only	Soft stock for buyers who machine and age afterwards

Physical Properties (Approx.)

Property	Value
Density	Approx. 8.28 g/cm³
Melting range	Approx. 1393-1427 °C
Curie temperature, hot rolled	Approx. -143 °C
Curie temperature, fully heat treated	Approx. -125 °C
Modulus of elasticity at 20 °C	Approx. 214 GPa
Modulus of rigidity at 20 °C	Approx. 76 GPa
Poisson's ratio	0.29
Thermal conductivity at 20 °C	Approx. 12.0 W/m·K
Specific heat at 20 °C	Approx. 431 J/kg·K
Electrical resistivity at 20 °C	Approx. 1.22 µΩ·m
Thermal expansion, 20-100 °C	Approx. 12.6 µm/m·K
Strengthening route	Precipitation hardening only

Standards and Designations

Standard	Product or Application
ASTM B637 / ASME SB637	Bars, forgings, and forging stock for moderate or high temperature service
AMS 5667	Bars, forgings, and rings, equalized and precipitation hardenable
AMS 5668 / AMS 5670 / AMS 5671 / AMS 5747	Bars, forgings, and rings by melting route and solution treatment
AMS 5669	Alloy bars, consumable electrode or vacuum induction melted
NACE MR0175 / ISO 15156-3	Sour service qualification where the order requires it
UNS N07750 - W.Nr. 2.4669 - NiCr15Fe7TiAl	Material designations
GB/T 14992 GH4145 - JIS NCF 750	Chinese and Japanese designations
ASTM B168 / ASTM B163	These documents do not cover UNS N07750

Typical Supply Dimensions — Centreless-Ground Rod

Product Form	Typical Supply Range
Centreless-ground rod	3-100 mm diameter held to h9
Ground rod, close band	3-60 mm diameter by agreement
Ground rod, long length	Straightness to 0.5 mm per metre on request
Ground and polished rod	Ground then polished for visible shafting

Surface Finishes

Surface Condition	Typical Use
Solution treated and pickled	Standard delivery for high-temperature service
Hot-worked	As-rolled or as-forged surface for parts that will be machined
Cold drawn	Close size control with a brighter surface
Peeled	Uniform diameter with a machined skin for further turning
Centerless ground	Tight diameter and straightness for shafting and pins
Polished	Reduced roughness for product-contact and visible parts
Bright annealed	Scale-free surface for instrument and clean circuits

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

Southerly Alloy — nickel alloy bar, rod, pipe, tube, plate and fittings · www.southerly-alloy.com · Values are for reference; the mill test certificate prevails for final acceptance.

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