

Inconel 625 (UNS N06625) — Technical Data Sheet

Grade data sheet covering bar and rod, pipe and tube, and plate — values are minimum requirements per the governing ASTM specification.

Chemical Composition (ASTM B446 / B444 / B705 / B704 / B443)

Element	Content
Nickel (Ni)	Balance
Chromium (Cr)	20.0–23.0%
Molybdenum (Mo)	8.0–10.0%
Niobium + Tantalum (Nb + Ta)	3.15–4.15%
Iron (Fe)	5.00% max.
Cobalt (Co)	1.00% max.
Carbon (C)	0.10% max.
Manganese (Mn)	0.50% max.
Silicon (Si)	0.50% max.
Phosphorus (P)	0.015% max.
Sulfur (S)	0.015% max.
Aluminum (Al)	0.40% max.
Titanium (Ti)	0.40% max.

Minimum Room-Temperature Mechanical Properties

Product Form	Standard	Condition	Tensile Strength	Yield Strength, 0.2% Offset	Elongation
Bar and rod ≤ 101.6 mm (4 in.) dia.	B446	Grade 1 (annealed ≥ 871 °C)	≥ 827 MPa (120 ksi)	≥ 414 MPa (60 ksi)	≥ 30%
Bar and rod 101.6–254 mm dia.	B446	Grade 1 (annealed)	≥ 758 MPa (110 ksi)	≥ 345 MPa (50 ksi)	≥ 25%
Bar and rod, all sizes	B446	Grade 2 (solution annealed ≥ 1093 °C)	≥ 690 MPa (100 ksi)	≥ 276 MPa (40 ksi)	≥ 30%
Seamless pipe and tube / welded pipe / welded tube	B444 / B705 / B704	Grade 1 (annealed)	≥ 827 MPa (120 ksi)	≥ 414 MPa (60 ksi)	≥ 30%
Seamless pipe and tube / welded pipe / welded tube	B444 / B705 / B704	Grade 2 (solution annealed)	≥ 690 MPa (100 ksi)	≥ 276 MPa (40 ksi)	≥ 30%
Cold-rolled sheet and strip	B443	Grade 1 (annealed)	≥ 827 MPa (120 ksi)	≥ 414 MPa (60 ksi)	≥ 30%
Hot-rolled sheet and plate up to 70 mm	B443	Grade 1 (annealed)	≥ 758 MPa (110 ksi)	≥ 379 MPa (55 ksi)	≥ 30%
Plate, sheet, and strip	B443	Grade 2 (solution annealed)	≥ 690 MPa (100 ksi)	≥ 276 MPa (40 ksi)	≥ 30%

Physical Properties (Approx., annealed)

Property	Value
Density	8.44 g/cm³ (0.305 lb/in³)
Melting Range	1290–1350 °C (2350–2460 °F)
Elastic Modulus	205 GPa (29.8 × 10³ ksi)
Thermal Conductivity	9.8 W/m·°C at 20 °C
Specific Heat	410 J/kg·°C
Expansion Coefficient	12.8 µm/m·°C (20–100 °C)
Alloy Type	Nickel-chromium-molybdenum, solid-solution strengthened (Mo, Nb)
PREN (pitting resistance estimate)	Approx. 50–52

Standards and Designations

Standard / Designation	Product / Application
ASTM B446 / ASME SB446	Bar and rod
ASTM B444 / ASME SB444	Seamless pipe and tube
ASTM B705 / ASME SB705	Welded pipe
ASTM B704 / ASME SB704	Welded tube
ASTM B443 / ASME SB443	Plate, sheet, and strip
ASTM B366 / B564	Fittings / forgings
SAE AMS 5666 / 5581 / 5599	Bar / seamless tube / sheet and plate
DIN 17752 / 17751	Bar / pipe, W.Nr. 2.4856
NACE MR0175 / ISO 15156	Sour-service qualification (reference)
UNS N06625 · W.Nr. 2.4856 · BS NA21	Designations

Typical Supply Dimensions

Product Form	Typical Supply Range
Bar and rod	3–500 mm dia. by section and condition
Seamless pipe	OD 6–219 mm, SCH 5 to SCH 80 and custom wall
Welded pipe	OD up to 1219 mm, SCH 5 to SCH XXS
Welded tube	OD 6–50 mm for heat-exchanger duty, custom wall
Plate and sheet	0.5–100 mm thick, cut to length and width

Values are for reference; the mill test certificate prevails for final acceptance. Dimensions, 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.