

SOUTHERLY ALLOY

Inconel 601 Pipe and Tube | UNS N06601 | Werkstoff Nr. 2.4851 / NiCr23Fe

ASTM B167 / B163 / B516 — Seamless and Welded Tubular Product for Furnace and Exchanger Duty

Product Description

Inconel 601 pipe and tube is produced in UNS N06601, an alumina-forming grade for oxidizing furnace service. Seamless product is ordered to ASTM B167 and B163, and welded tube to B516. Sizes run from precision exchanger tube to large-diameter furnace piping, delivered annealed or hot-finished with EN 10204 3.1 certification.

Chemical Composition (ASTM B167 / B163 / B516)

Element	Content
Nickel (Ni)	58.0–63.0%
Chromium (Cr)	21.0–25.0%
Aluminium (Al)	1.0–1.7%
Iron (Fe)	Balance
Carbon (C), max.	0.10%
Manganese (Mn), max.	1.00%
Silicon (Si), max.	0.50%
Copper (Cu), max.	1.00%
Sulphur (S), max.	0.015%

The purchase specification in force and the mill test certificate decide final acceptance.

Minimum Room-Temperature Mechanical Properties

Product Form	Standard	Condition	Tensile Strength	Yield Strength, 0.2% Offset	Elongation
Seamless pipe and tube	B167	Cold-worked or hot-worked annealed, all sizes	≥ 550 MPa (80 ksi)	≥ 205 MPa (30 ksi)	≥ 30%
Heat-exchanger tube	B163	Annealed	≥ 552 MPa (80 ksi)	≥ 207 MPa (30 ksi)	≥ 30%
Welded tube	B516	Cold-worked and annealed	≥ 550 MPa (80 ksi)	≥ 205 MPa (30 ksi)	≥ 30%

ASTM B517 covers welded nickel-chromium-iron pipe for UNS N06600 and related grades but does not list N06601; welded Alloy 601 pipe is therefore quoted against B516 tube requirements or the project specification.

Physical Properties (typical room-temperature values)

Property	Value
Density	Approx. 8.11 g/cm ³
Melting range	Approx. 1360–1411 °C
Modulus of elasticity	Approx. 206 GPa
Thermal conductivity at 20 °C	Approx. 11.2 W/m·K
Specific heat at 20 °C	Approx. 450 J/kg·K
Electrical resistivity at 20 °C	Approx. 1.19 μΩ·m
Thermal expansion, 20–100 °C	Approx. 13.8 μm/m·K
Service ceiling in air	Up to 1250 °C, duty dependent

Applicable Standards

Standard / Designation	Product / Application
ASTM B167 / ASME SB167	Seamless pipe and tube, hot-worked and cold-worked
ASTM B163 / ASME SB163	Seamless condenser and heat-exchanger tube
ASTM B516 / ASME SB516	Welded tube, cold-worked and annealed
ASTM B829	General requirements for seamless nickel alloy pipe and tube
ASTM B775 / B751	General requirements for welded nickel alloy pipe and tube
SAE AMS 5715	Bars, forgings, rings, and custom tube
DIN 17751	Nickel alloy tube, W.Nr. 2.4851
ISO 6207	Nickel alloy seamless tube
EN 10095	Heat-resisting steels and nickel alloys
UNS N06601 · W.Nr. 2.4851 · NiCr23Fe · JIS NCF 601	Designations

Typical Supply Dimensions

Product Form	Typical Supply Range	Length
Seamless pipe	NPS 1/8 to NPS 24, SCH 10 to SCH 160	Single random, double random, or custom
Seamless tube	OD 6–101.6 mm, wall 0.5–10 mm	Up to 12 m or custom cut lengths
Heat-exchanger tube	OD 6–76.2 mm, wall 0.7–6 mm	Up to 12 m or U-bend
Welded tube	OD 3.18–127 mm, wall 0.38–12.7 mm	Coil or fixed length
EP / BA tube	OD 6–50.8 mm, wall 0.5–3 mm	Up to 6–12 m, clean service
Coil / U-bend tube	OD 6–25.4 mm, wall 0.5–2 mm	Continuous coil or custom U-bend

Supply Conditions and Finishes

Surface Condition	Typical Use
Annealed & Pickled	Standard delivered condition for fabrication and installation
Bright Annealed	Smooth, scale-free bore and OD for instrumentation and clean service
Pickled Only	Acid-descaled surface for general industrial piping
Beveled End	Weld-preparation beveling to the agreed standard for butt welds

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