

SOUTHERLY ALLOY

Hastelloy C-22 Pipe and Tube | UNS N06022 | Werkstoff Nr. 2.4602 / NiCr21Mo14W

ASTM B622 / B619 / B626 — Seamless Tube plus Welded Pipe and Tube

Product Description

Hastelloy C-22 seamless pipe and tube is supplied to ASTM B622 in UNS N06022 / W.Nr. 2.4602, a nickel-chromium-molybdenum-tungsten alloy with chromium at 20.0–22.5%. Welded pipe follows B619 and welded tube follows B626, both solution annealed and water quenched after welding. Chromium carries oxidizing acids, wet chlorine, and oxidizing chloride salts, while molybdenum and tungsten hold the reducing-acid and pitting side. Seamless product is limited to 88.9 mm outside diameter by B622; larger lines move to welded construction.

Chemical Composition (ASTM B622 / B619 / B626)

Element	Content	Element	Content
Nickel (Ni)	Balance	Cobalt (Co), max.	2.50%
Chromium (Cr)	20.0–22.5%	Manganese (Mn), max.	0.50%
Molybdenum (Mo)	12.5–14.5%	Vanadium (V), max.	0.35%
Tungsten (W)	2.5–3.5%	Silicon (Si), max.	0.08%
Iron (Fe)	2.0–6.0%	Carbon (C), max.	0.015%
Phosphorus (P), max.	0.020%	Sulfur (S), max.	0.020%

Minimum Room-Temperature Mechanical Properties

Product Form	Std.	Condition	Tensile Strength	Yield Strength, 0.2% Offset	Elongation
Seamless pipe and tube	B622	Solution annealed	≥ 690 MPa (100 ksi)	≥ 310 MPa (45 ksi)	≥ 45%
Welded pipe	B619	Annealed after welding	≥ 690 MPa (100 ksi)	≥ 310 MPa (45 ksi)	≥ 45%
Welded tube	B626	Annealed after welding	≥ 690 MPa (100 ksi)	≥ 310 MPa (45 ksi)	≥ 45%

B622 adds hydrostatic, flattening, and flare testing. B626 adds a 100% eddy-current or ultrasonic examination. No aerospace AMS document covers C-22 tubular product.

Physical Properties (typical values)

Property	Value	Property	Value
Density	Approx. 8.69 g/cm ³	Electrical resistivity, 20 °C	Approx. 1.14 µΩ·m
Melting range	Approx. 1357–1399 °C	Thermal expansion, 20–100 °C	Approx. 12.4 µm/m·K
Modulus of elasticity	Approx. 206 GPa	Strengthening	Solid solution and cold work
Thermal conductivity, 20 °C	Approx. 10.1 W/m·K	Magnetic behaviour	Practically non-magnetic
Specific heat	Approx. 414 J/kg·K	Service ceiling	1250 °F (677 °C) continuous

Applicable Standards

Standard / Designation	Product / Application
ASTM B622 / ASME SB622	Seamless pipe and tube, outside diameter to 88.9 mm (3.5 in)
ASTM B619 / ASME SB619	Welded pipe, solution annealed after welding
ASTM B626 / ASME SB626	Welded tube for heat exchangers, condensers, and evaporators
ASTM B829	General requirements for seamless nickel alloy pipe and tube
ASTM B775 / B751	General requirements for welded nickel alloy pipe and tube
ASME B16.25	Buttwelding ends
NACE MR0175 / ISO 15156	Sour service in oil and gas production
DIN 17751	Nickel alloy tube, W.Nr. 2.4602
ISO 6207	Nickel alloy seamless tube
UNS N06022 · W.Nr. 2.4602 · NiCr21Mo14W · NS334	Designations

Typical Supply Dimensions

Product Form	Typical Supply Range	Length
Seamless pipe	NPS 1/8 to NPS 3, outside diameter to 88.9 mm	Random or custom lengths
Seamless tube	OD 6–88.9 mm, wall 0.5–10 mm	Up to 12 m or custom cut
Heat-exchanger tube	OD 6.35–76.2 mm, wall 0.7–6 mm	Up to 12 m or U-bend
Welded pipe	OD 21.3–610 mm, wall 0.5–100 mm	Fixed length or random
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

Solution annealing runs at 1121 °C (2050 °F) with a water quench. Filler metal for welding: ERNiCrMo-10 / ENiCrMo-10.

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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