

Product Description

Hastelloy C-22 plate, sheet, and strip is supplied to ASTM B575 in UNS N06022 / W.Nr. 2.4602, a nickel-chromium-molybdenum-tungsten alloy with chromium at 20.0–22.5%. Chromium carries oxidizing media such as nitric acid, wet chlorine, and ferric chloride, while molybdenum and tungsten hold the reducing-acid and pitting side. Flat-rolled gauges follow B575 alongside B906 general requirements, and the solution-annealed condition suits forming and welding without a further heat treatment. The grade is not age-hardenable.

Chemical Composition (ASTM B575)

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%	Phosphorus (P), max.	0.020%
Tungsten (W)	2.5–3.5%	Sulfur (S), max.	0.020%
Iron (Fe)	2.0–6.0%	Vanadium (V), max.	0.35%
Silicon (Si), max.	0.08%	Carbon (C), max.	0.015%

Minimum Room-Temperature Mechanical Properties

Product Form	Std.	Condition	Tensile Strength	Yield Strength, 0.2% Offset	Elongation
Hot-rolled plate	B575	Solution annealed	≥ 690 MPa (100 ksi)	≥ 310 MPa (45 ksi)	≥ 45%
Cold-rolled sheet and strip	B575	Solution annealed	≥ 690 MPa (100 ksi)	≥ 310 MPa (45 ksi)	≥ 45%
Cut blanks and profiled plate	B575	Solution annealed	≥ 690 MPa (100 ksi)	≥ 310 MPa (45 ksi)	≥ 45%

Annealed flat product runs at or below 100 HRB on the B-scale, a figure B575 lists for guidance only. No aerospace AMS document covers this grade.

Physical Properties (typical values)

Property	Value	Property	Value
Density	Approx. 8.69 g/cm³	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 B575 / ASME SB575	Plate, sheet, and strip, solution annealed and descaled
ASTM B906	General requirements for flat-rolled nickel alloy product
ASTM B574 / B564 / B366	Bar and rod, forgings, and wrought fittings in the same grade
ASTM B622 / B619 / B626	Seamless and welded tubular product in the same grade
NACE MR0175 / ISO 15156	Sour service in oil and gas production
DIN 17750	Nickel alloy plate, sheet, and strip, W.Nr. 2.4602
ISO 6208	Nickel and nickel alloy plate, sheet, and strip
UNS N06022 · W.Nr. 2.4602 · NiCr21Mo14W · NS334	Designations

Typical Supply Dimensions

Product Form	Typical Supply Range	Length
Hot-rolled plate	4.8–100 mm thick, widths to 2000 mm	Cut to length and width
Cold-rolled sheet	0.5–6.35 mm thick, widths to 1500 mm	Cut to length and width
Strip and coil	0.5–6.35 mm thick, slit to width	Coil or custom lengths
Cut blanks	Any stocked gauge	To customer drawing

Solution annealing runs at 1121 °C (2050 °F) with a water quench. Hot work between roughly 650 and 1090 °C needs a follow-up anneal.

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.