Hastelloy C-22 Flat Bar (UNS N06022 / W.Nr. 2.4602) — Technical Data Sheet

Flat Bar supplied to ASTM B574 and ASME SB574 for UNS N06022 — the standard sets one solution-annealed condition for rod and bar, its mechanical table carries no hardness column, and DIN 17752, ISO 9723 and VdTÜV 479 cover European and international orders.

Chemical Composition — ASTM B574 limits, UNS N06022

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

Minimum Mechanical Properties (ASTM B574, solution annealed)

Condition and Grade	Tensile Strength, min.	Yield Strength (0.2%), min.	Elongation, min.
Solution Annealed — UNS N06022	≥690 MPa (100 ksi)	≥310 MPa (45 ksi)	45%

Physical Properties (Approx.)

Property	Value
Alloy	Hastelloy C-22
UNS	N06022
Werkstoff	2.4602
Density	Approx. 8.69 g/cm³
Melting Range	Approx. 1357–1399 °C
Elastic Modulus	Approx. 206 GPa
Thermal Conductivity	Approx. 10.1 W/m·°C at 20 °C
Specific Heat	Approx. 414 J/kg·°C
Expansion Coefficient	Approx. 12.4 µm/m·°C (20–100 °C)
Electrical Resistivity	Approx. 1.14 µΩ·m at 20 °C
Alloy Type	Nickel-chromium-molybdenum with tungsten
Strengthening	Solid solution and cold work
Magnetic Behaviour	Practically non-magnetic at ambient temperature

Standards and Designations

Standard	Product or Application
ASTM B574 / ASME SB574	Nickel-chromium-molybdenum-tungsten rod and bar, UNS N06022 in the scope table
DIN 17752 / ISO 9723	German and international bar documents
VdTÜV 479 / NACE MR0175	German material sheet and sour-service qualification

Heat Treatment (solution anneal and release)

Condition	Typical Treatment
Solution Annealed	Held at 1121 °C, then water quenched, because slow cooling would let intermetallic phases form
Hot-Worked	Delivered as-rolled or as-forged, with the anneal agreed where the order calls for it
Cold-Drawn	Drawn after annealing, with the reduction recorded so the higher proof stress is documented
Stress-Relief Warning	A conventional 650 °C relief cycle destroys the corrosion resistance of this grade, so residual-stress work needs a full anneal instead
Sour-Service Release	NACE MR0175 orders carry a per-lot hardness record against the 35 HRC ceiling

Surface Finishes (Flat Bar)

Surface Condition	Typical Use
Hot-Worked	As-rolled or as-forged skin on this flat bar, for parts that will be machined all over.
Peeled	A machined skin on this flat bar with a uniform diameter for oxidising-acid shaft work.
Polished	Reduced roughness on this flat bar for pharmaceutical contact and visible components.

Typical Supply Dimensions — Flat Bar

Product Form	Typical Supply	Length
Flat Bar	3–100 mm thick × 10–300 mm wide	Cut to length or random
Rectangular Bar	5–100 mm thick × 10–254 mm wide	Cut to length or random
Hot-Worked Flat Bar	20–100 mm thick × 50–300 mm wide	Cut to length or random
Annealed Flat Bar	3–100 mm thick × 10–300 mm wide	Cut to length
Forged Flat Bar	20–150 mm thick × 50–400 mm wide	Cut to length
Custom Flat Bar	To drawing	Custom

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