

Hastelloy C-22 (UNS N06022) — Material Data Sheet

ASTM B574 rod · UNS N06022 · Hastelloy® C-22 (Ni-Cr-Mo-W)

Solid-solution nickel-chromium-molybdenum-tungsten alloy, solution annealed

The higher-chromium C alloy — better than C-276 in oxidising acids, ferric and cupric chlorides and wet chlorine, with the same resistance to pitting and stress-corrosion cracking.

TENSILE, B574 ANNEALED	100 ksi min	CHROMIUM / MOLYBDENUM	20–22.5 / 12.5–14.5 %
YIELD, B574 ANNEALED	45 ksi min	FASTENER SPEC	Machined to B574; F468 by agreement
ELONGATION	45 % min	MAGNETIC	No

Nominal composition



■ Ni balance ~ 56.5% ■ Cr ~ 21.25% ■ Mo ~ 13.50% ■ Fe ~ 4.00% ■ W ~ 3.00% ■ Co ~ 1.25% ■ Mn, V, C, Si, P, S trace

Midpoints of the specification ranges, for orientation only. Limits are in the table.

Chemical composition — Hastelloy C-22 (N06022) per ASTM B574 Table 1

Element	Symbol	Min %	Max %
Nickel	Ni	balance	—
Chromium	Cr	20.0	22.5
Molybdenum	Mo	12.5	14.5
Iron	Fe	2.0	6.0
Tungsten	W	2.5	3.5
Cobalt	Co	—	2.5
Manganese	Mn	—	0.50
Vanadium	V	—	0.35
Carbon	C	—	0.015
Silicon	Si	—	0.08
Phosphorus	P	—	0.02
Sulfur	S	—	0.02

Values per ASTM B574-18 Table 1 (verified against the specification). Confirm the edition called out on your purchase order with our estimating team.

Physical properties (typical)

DENSITY	0.314 lb/in ³ (8.69 g/cm ³)
MODULUS OF ELASTICITY	30.0 × 10 ⁶ psi (206 GPa)
MELTING RANGE	2475–2550 °F
MAGNETIC	No

Heat treatment

Not age hardenable. Solution annealed and rapidly cooled.

Rod properties — Hastelloy C-22 per ASTM B574 Table 5, hot or cold finished, solution annealed

Condition and size	Tensile strength, min (ksi)	Yield strength 0.2%, min (ksi)	Elongation, min (%)
Solution annealed — all sizes	100	45	45

Values per ASTM B574-18 Table 5 (verified against the specification). Confirm the edition called out on your purchase order with our estimating team.

Applicable standards

ASTM B574	Low-carbon nickel-chromium-molybdenum alloy rod
ASME SB-574	Boiler and Pressure Vessel Code equivalent
ASTM B575	Alloy C-22 plate, sheet and strip
NACE MR0175 / ISO 15156	Alloy C-22 for sour service

Forms we supply in Hastelloy C-22

- Full-thread studs and stud bolts
- Hex and heavy hex bolts
- Socket head cap screws
- Hex nuts in the same alloy
- Threaded rod
- Machined components from certified bar

Typical applications

- Flue-gas desulfurisation and incinerator scrubbers
- Chlorination and wet-chlorine systems
- Nitric and mixed oxidising acid service
- Pharmaceutical reactors and agitators
- Nuclear waste containment