

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

Wire supplied to DIN 17753, ISO 9724 and VdTÜV 400 — ASTM B574 defines the grade chemistry but stops short of wire; figures are typical published Alloy Wire International ranges, with an optional 400–450 °C relief pass after cold forming.

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.

Typical Strength Ranges by Temper (wire as delivered)

Temper	Typical Tensile Strength	Typical Use
Annealed (soft)	800–1100 MPa (116–159 ksi)	Forming and coiling before fabrication
Spring temper	1400–1700 MPa (203–247 ksi)	Springs, clips and retained-set parts

Delivery Conditions

Delivery State	Typical Diameter	Notes
Annealed (soft)	0.025–21 mm	Softest state, formed and coiled before fabrication
Spring temper	0.10–8.0 mm	Heavily reduced, holds a set in spring work
Stress relieved	0.10–12 mm	Relieved at 400–450 °C for two hours and air cooled after forming

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
DIN 17753	German wire document covering UNS N06022
ISO 9724	ISO wire document for nickel alloys
VdTÜV 400	German pressure vessel data sheet covering wire

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 (Wire)

Surface Condition	Typical Use
Bright Annealed	Protective-atmosphere annealing leaves this wire oxide-free and ready to redraw.
Coated	A light carrier film on this wire that protects it during downstream redrawing.
Polished	Reduced roughness on this wire for pharmaceutical contact and visible components.

Typical Supply Dimensions — Wire

Product Form	Typical Supply	Length
Wire (Coil or Spool)	0.025–21 mm dia., typical	Coil, spool or custom
Fine Wire	0.025–0.80 mm dia.	Spool
Spring-Temper Wire	0.10–8.0 mm dia.	Coil or spool
Woven Mesh Wire	0.10–3.0 mm dia.	Coil
Straightened and Cut Wire	1.0–10 mm dia.	Straight lengths
Custom Wire	To drawing	Custom