

Incoloy 825 Wire (UNS N08825 / W.Nr. 2.4858) — Technical Data Sheet

Wire wire supplied to BS 3075 NA16, DIN 17753 and ISO 9724 — B425 defines the grade chemistry but stops short of wire; figures are typical published Alloy Wire International ranges, with an optional stress relief after cold forming.

Chemical Composition — ASTM B425 limits, UNS N08825

Element	Content
Nickel (Ni)	38.0–46.0%
Chromium (Cr)	19.5–23.5%
Iron (Fe)	22.0% min.
Molybdenum (Mo)	2.5–3.5%
Copper (Cu)	1.5–3.0%
Titanium (Ti)	0.6–1.2%
Carbon (C)	0.05% max.
Manganese (Mn)	1.00% max.
Silicon (Si)	0.50% max.
Aluminium (Al)	0.20% max.
Sulfur (S)	0.03% max.

Typical Strength Ranges by Temper (wire as delivered)

Temper	Typical Tensile Strength	Typical Use
Annealed (soft)	600–800 MPa (87–116 ksi)	Forming and coiling before fabrication
Spring temper	800–1100 MPa (116–160 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 after cold forming where the order calls for it

Physical Properties (Approx.)

Property	Value
Density	Approx. 8.14 g/cm³
Melting range	Approx. 1370–1400 °C
Specific heat at 20 °C	Approx. 440 J/kg·K
Modulus of elasticity at 20 °C	Approx. 196 GPa
Shear modulus at 20 °C	Approx. 76 GPa
Poisson's ratio	Approx. 0.29
Thermal conductivity at 25 °C	Approx. 11.1 W/m·K
Thermal expansion, 20–100 °C	Approx. 14.1 µm/m·K
Electrical resistivity at 25 °C	Approx. 1.13 µΩ·m
Curie temperature	Below –196 °C
Relative permeability at 200 oersted	1.005
Magnetic behaviour	Non-magnetic at ambient temperature

Standards and Designations

Standard	Product or Application
BS 3075 NA16	British wire document for UNS N08825
DIN 17753	German wire document for UNS N08825
ISO 9724	ISO wire document for nickel alloys

Heat Treatment (solution anneal and release)

Condition	Typical Treatment
Solution Annealed	Held at 927–1010 °C (1700–1850 °F), then cooled rapidly to restore full corrosion resistance
Hot-Worked	Delivered as-rolled or as-forged, with the solution anneal agreed where the order calls for it
Cold-Drawn	Drawn after annealing, with the reduction recorded so the higher yield strength is documented
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 draw.
Pickled	Acid cleaning descaled this wire after the anneal.
Coated	A light carrier film on this wire that protects it during downstream redrawing.

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

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