

Monel 400 Wire (UNS N04400) — Technical Data Sheet

Wire wire supplied to ASTM B164 Table 2, AMS 4730, DIN 17753 and ISO 9724 — figures are typical published ranges for the ordered diameter and temper, because B164 covers cold-worked wire only.

Chemical Composition — ASTM shared composition table

Element	Content
Nickel (Ni) plus Cobalt (Co)	63.0% min.
Copper (Cu)	28.0–34.0%
Iron (Fe)	2.5% max.
Manganese (Mn)	2.0% max.
Carbon (C)	0.30% max.
Silicon (Si)	0.50% max.
Sulfur (S)	0.024% max.

Typical Strength Ranges by Temper (wire as delivered)

Temper	Tensile Strength, typical	Yield Strength, typical	Elongation, typical
Annealed (soft)	480–600 MPa (70–85 ksi)	170–250 MPa (25–36 ksi)	35–50%
Quarter hard	600–750 MPa (85–110 ksi)	380 MPa (55 ksi) min.	20–30%
Half hard	750–900 MPa (110–130 ksi)	480 MPa (70 ksi) min.	10–20%
Full hard (spring)	1000–1200 MPa (145–175 ksi)	690 MPa (100 ksi) min.	2–5%

Delivery Conditions

Delivery State	Typical Diameter	Notes
Hot rolled wire rod	5.5–8.0 mm	Drawing stock supplied for downstream redraw
Annealed	0.10–10 mm	Softest product wire, offering the best ductility
Quarter hard	0.20–8.0 mm	Intermediate temper for heading and forming
Half hard	0.20–6.0 mm	Higher strength for pins, clips and meshes
Spring temper	0.20–6.0 mm	Heaviest reduction, for springs and retaining rings

Physical Properties (Approx.)

Property	Value
Alloy	Monel 400
UNS	N04400
Werkstoff	2.4360
Density	Approx. 8.80 g/cm³
Melting range	Approx. 1300–1350 °C
Modulus of elasticity	Approx. 179 GPa
Thermal conductivity at 20 °C	Approx. 21.8 W/m·K
Specific heat at 20 °C	Approx. 427 J/kg·K
Electrical resistivity at 20 °C	Approx. 0.51 µΩ·m
Thermal expansion, 20–100 °C	Approx. 13.9 µm/m·K
Curie temperature	Approx. 21–49 °C
Magnetic behaviour	Slightly ferromagnetic at ambient temperature
Strengthening route	Cold work only

Standards and Designations

Standard	Product or Application
ASTM B164 Table 2	Cold-worked wire, UNS N04400
AMS 4730	Wire for aerospace and defence programmes
DIN 17753 / ISO 9724	European and ISO wire documents

Heat Treatment

Condition	Typical Treatment
Annealed	Held between 870 and 980 °C (1600–1800 °F), then cooled
Stress Relieved	300–320 °C (570–610 °F) for about one hour, then air cooled
Custom Condition	Heat treatment according to the agreed specification

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 / Spool)	0.10–10 mm dia., typical	Coil, spool or custom
Wire Rod (Drawing Stock)	5.5–8.0 mm dia.	Coil
Fine Wire	0.10–0.80 mm dia.	Spool
Straightened and Cut Wire	1.0–10 mm dia.	Straight lengths
Spring-Temper Wire	0.20–6.0 mm dia.	Coil or spool
Custom Wire	To drawing	Custom

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