Monel 400 Bright Bar (UNS N04400) — Technical Data Sheet

Bright Bar supplied to ASTM B164 and ASME SB164 in UNS N04400 — values are minimum requirements; the ordered condition and section size govern final acceptance, and cold work is the only strengthening route.

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.

Minimum Room-Temperature Mechanical Properties (ASTM B164)

Condition and Section	Tensile Strength, min.	Yield Strength (0.2%), min.	Elongation, min.
Hot-worked, rounds to 305 mm (12 in.)	≥80 ksi (552 MPa)	≥40 ksi (276 MPa)	30%
Hot-worked, annealed, all sizes	≥70 ksi (480 MPa)	≥25 ksi (170 MPa)	35%
Cold-worked, stress-relieved, rounds 12.7–88.9 mm (1/2–3-1/2 in.)	≥87 ksi (600 MPa)	≥60 ksi (415 MPa)	20%
Cold-worked, as-worked, rounds under 12.7 mm (1/2 in.)	≥110 ksi (760 MPa)	≥85 ksi (585 MPa)	8%

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	Nickel-copper rod, bar and wire, UNS N04400
ASME SB164	ASME counterpart for pressure equipment
AMS 4675	Bars, forgings and rings of this grade

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 (Bright Bar)

Surface Condition	Typical Use
Cold Drawn	Drawn stock giving this bright bar close diameter control and a smooth bright skin.
Centreless Ground	Ground diameter and straightness on this bright bar for shafts and spindles.
Polished	Reduced roughness on this bright bar for product-contact and visible components.

Typical Supply Dimensions — Bright Bar

Product Form	Typical Supply	Length
Bright Bar	6–150 mm dia.	Cut to length or random
Bright-Drawn Bar	6–80 mm dia.	Cut to length
Peeled Bar	20–100 mm dia.	Cut to length
Centreless-Ground Bar	3–100 mm dia.	Cut to length
Precision-Ground Bar	3–80 mm dia.	Cut to length
Polished Bar	6–100 mm dia.	Cut to length
Custom Bright Bar	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.