NICKEL 200

UNS N02200 · W.Nr. 2.4066

Commercially Pure Wrought Nickel

Commercially pure wrought nickel with excellent caustic resistance and high thermal conductivity.

01 PRODUCT INTRODUCTION

Nickel 200 is a commercially pure wrought nickel containing at least 99.0% nickel plus cobalt. It combines good mechanical properties with high thermal and electrical conductivity, low gas content and excellent resistance to caustic alkalies, dry fluorine and many distilled or natural waters. It is readily formed, welded and machined using nickel-alloy practices. Because its carbon limit permits graphite formation during prolonged exposure from about 315°C to 760°C, Nickel 200 is normally limited to service below about 315°C in environments where graphitization could impair ductility. Final selection should consider product form, temperature, stress, impurities, fabrication route and the governing ASTM or ASME specification.

02 ENGINEERING POSITION

Core advantage	Caustic alkalies, neutral salts, distilled water, dry fluorine and reducing environments
Applications	Caustic soda equipment · food processing · electrical components · chemical drums · heat exchangers · laboratory hardware
Material class	Commercially pure wrought nickel

SELECTION NOTE **Use Nickel 201 rather than Nickel 200 for prolonged service above about 315°C where graphitization is a concern.**

03 COMMON INDUSTRY USE

Industry focus	Caustic soda equipment · food processing · electrical components · chemical drums · heat exchangers · laboratory hardware
Identity	Nickel 200 · UNS N02200

Composition & Physical Data

Limiting composition and typical physical constants.

04 CHEMICAL COMPOSITION

WEIGHT %

Ni + Co	≥ 99.0%	C	≤ 0.15%
Fe	≤ 0.40%	Mn	≤ 0.35%
Si	≤ 0.35%	Cu	≤ 0.25%
S	≤ 0.01%	Mg	Specification limit

CRITICAL DIFFERENCE Carbon is limited to 0.15% maximum; evaluate graphitization for prolonged 315–760°C service.

05 TYPICAL PHYSICAL PROPERTIES

Density	8.89 g/cm³	Melting range	1435–1446°C
Thermal cond.	Approx. 70 W/m·K	Specific heat	Approx. 456 J/kg·°C
Elastic modulus	Approx. 204 GPa	Magnetism	Ferromagnetic

06 MATERIAL IDENTITY

Common name	Nickel 200
UNS / W.Nr.	N02200 / 2.4066
Alloy family	Commercially pure wrought nickel
Product standards	ASTM B160 · B161 · B162 · B163 · B725 · B730

ACCEPTANCE RULE Use the governing product specification and certified MTR for final acceptance.

Mechanical & Service Performance

Condition-dependent strength, conductivity and corrosion guidance.

07 MECHANICAL PROPERTIES

Annealed mechanical properties depend on product form and thickness; use ASTM B160/B161/B162/B163 requirements for acceptance.

08 SERVICE PERFORMANCE

Primary service	Caustic alkalies, neutral salts, distilled water, dry fluorine and reducing environments
Caustic alkalies	Excellent resistance across many concentrations; assess temperature and contaminants.
Reducing media	Good resistance to neutral salts and many reducing environments.
Oxidizing media	Not generally selected for strongly oxidizing acids or oxidizing salts.
Temperature limit	Avoid prolonged 315–760°C exposure where graphitization could reduce ductility.

09 TYPICAL APPLICATIONS

Industries	Caustic soda equipment · food processing · electrical components · chemical drums · heat exchangers · laboratory hardware
Critical review	Review sulfur compounds, oxidizing contaminants, galvanic coupling and stress state.

IMPORTANT

Typical values are screening data. Product specification, code compliance and certified material data govern final selection.

Fabrication, Welding & Heat Treatment

Practical controls for maintaining pure-nickel performance.

10 FORMING & MACHINING

Cold forming	Excellent ductility; account for work hardening in heavy forming.
Machining	Use sharp tooling, positive feeds and sufficient coolant to avoid built-up edge.
Hot working	Use grade- and product-specific temperature windows and avoid sulfur contamination.

11 WELDING GUIDANCE

Processes	GTAW, GMAW and SMAW may be used with qualified procedures.
Filler metal	Select commercially pure nickel filler compatible with service and specification.
Cleanliness	Remove sulfur-bearing compounds, grease, oxides and iron contamination.
Heat input	Control interpass temperature and avoid unnecessary reheating.

12 HEAT TREATMENT

Nickel 200 is not age hardenable. Annealing restores ductility after cold work; prolonged 315–760°C exposure may cause graphitization.

QUALITY CONTROL **Confirm WPS/PQR, surface cleaning, annealing condition, NDE and heat-number traceability.**

Product Forms, Standards & Procurement

A practical specification and quotation checklist.

13 REFERENCE STANDARDS

ASTM B160 · B161 · B162 · B163 · B725 · B730 · corresponding ASME SB specifications

14 COMMON PRODUCT FORMS

Forms	Plate · sheet · strip · bar · wire · pipe · tube · fittings
Condition	Annealed, stress relieved or cold worked as specified

15 RFQ INFORMATION

Material	Nickel 200 · UNS N02200 · governing ASTM/ASME specification
Dimensions	Form, OD/ID, wall or thickness, tolerances, length and quantity
Testing	Chemistry, tensile, hardness, PMI, NDE and customer-specific tests
Documents	EN 10204 3.1 MTR, heat traceability and compliance certificates

16 TECHNICAL DISCLAIMER

Values shown are typical or specification-level references and may vary by product form, thickness, heat treatment and governing standard. They do not replace engineering design calculations, corrosion review, applicable codes or the certified material test report.

Source basis	ASTM / ASME product standards and established commercially pure nickel technical data