# Nickel 200 / 201 Hex Bar (UNS N02200 / N02201) — Technical Data Sheet

Hex Bar supplied to ASTM B160 and ASME SB160 in UNS N02200 and N02201 — values are minimum requirements; the ordered condition and section size govern final acceptance.

## Chemical Composition — ASTM shared composition table

| Element | Nickel 200 (UNS N02200) | Nickel 201 (UNS N02201) |
|---|---|---|
| Nickel (Ni), min. | 99.0% | 99.0% |
| Copper (Cu), max. | 0.25% | 0.25% |
| Iron (Fe), max. | 0.40% | 0.40% |
| Manganese (Mn), max. | 0.35% | 0.35% |
| Carbon (C), max. | 0.15% | 0.02% |
| Silicon (Si), max. | 0.35% | 0.35% |
| Sulfur (S), max. | 0.01% | 0.01% |

## Minimum Room-Temperature Mechanical Properties (ASTM B160)

| Condition and Section | Tensile Strength, min. | Yield Strength (0.2%), min. | Elongation, min. |
|---|---|---|---|
| Nickel 200, cold-worked, rounds ≤ 25.4 mm (1 in.) | ≥80 ksi (550 MPa) | ≥60 ksi (415 MPa) | 10% |
| Nickel 200, cold-worked, rounds 25.4–101.6 mm (1–4 in.) | ≥75 ksi (515 MPa) | ≥50 ksi (345 MPa) | 15% |
| Nickel 200, cold-worked, squares, hexagons and rectangles | ≥65 ksi (450 MPa) | ≥40 ksi (275 MPa) | 25% |
| Nickel 200, hot-worked, all sections and sizes | ≥60 ksi (415 MPa) | ≥15 ksi (105 MPa) | 35% |
| Nickel 200, annealed, rods and bars of all sizes | ≥55 ksi (380 MPa) | ≥15 ksi (105 MPa) | 40% |
| Nickel 201, hot-worked, all sections and sizes | ≥50 ksi (345 MPa) | ≥10 ksi (70 MPa) | 40% |
| Nickel 201, annealed, all products and sizes | ≥50 ksi (345 MPa) | ≥10 ksi (70 MPa) | 40% |

## Physical Properties (Approx.)

| Property | Nickel 200 (N02200) | Nickel 201 (N02201) |
|---|---|---|
| Density | Approx. 8.89 g/cm³ | Approx. 8.89 g/cm³ |
| Melting range | Approx. 1435–1446 °C | Approx. 1435–1446 °C |
| Specific heat at 20 °C | Approx. 456 J/kg·K | Approx. 456 J/kg·K |
| Curie temperature | Approx. 360 °C (680 °F) | Approx. 360 °C (680 °F) |
| Modulus of elasticity | Approx. 205 GPa | Approx. 207 GPa |
| Thermal conductivity at 20 °C | Approx. 70.3 W/m·K | Approx. 79.3 W/m·K |
| Electrical resistivity at 20 °C | Approx. 0.096 μΩ·m | Approx. 0.085 μΩ·m |
| Thermal expansion, 20–100 °C | Approx. 13.3 μm/m·K | Approx. 13.2 μm/m·K |
| Poisson's ratio | Approx. 0.29 | Approx. 0.29 |
| Magnetic behaviour | Ferromagnetic at room temperature | Ferromagnetic at room temperature |

## Standards and Designations

| Standard | Product or Application |
|---|---|
| ASTM B160 | Nickel rod and bar, UNS N02200 and N02201 |
| ASME SB160 | ASME counterpart for pressure equipment |
| DIN 17752 | Nickel bar and rod, European procurement |

## Heat Treatment

| Condition | Typical Treatment |
|---|---|
| Annealed | Held between 705 and 925 °C (1300–1697 °F), then cooled |
| Stress Relieved | 705–870 °C (1300–1600 °F) where straightness or residual stress demands it |
| Custom Condition | Heat treatment according to the agreed specification |

## Surface Finishes (Hex Bar)

| Surface Condition | Typical Use |
|---|---|
| Cold Drawn | Drawn stock giving this hex bar close diameter control and a smooth skin. |
| Peeled | A machined skin on this hex bar with uniform diameter for turning. |
| Rough Turned | A turned surface on this hex bar where the finishing cut comes later. |

## Typical Supply Dimensions — Hex Bar

| Product Form | Typical Supply | Length |
|---|---|---|
| Hex Bar | 10–150 mm A/F | Cut to length or random |
| Cold-Drawn Hex Bar | 10–80 mm A/F | Cut to length |
| Bright Hex Bar | 10–100 mm A/F | Cut to length or random |
| Peeled Hex Bar | 20–100 mm A/F | Cut to length |
| Precision Hex Bar | 10–60 mm A/F | Cut to length |
| Forged Hex Bar | 100–200 mm A/F | Cut to length |
| Custom Hex 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.