# Hastelloy C-22 Bright Bar (UNS N06022 / W.Nr. 2.4602) — Technical Data Sheet

Bright Bar supplied to ASTM B574 and ASME SB574 for UNS N06022 — the standard sets one solution-annealed condition for rod and bar, its mechanical table carries no hardness column, and DIN 17752, ISO 9723 and VdTÜV 479 cover European and international orders.

## Chemical Composition — ASTM B574 limits, UNS N06022

| Element | Content |
|---|---|
| Nickel (Ni) | Balance |
| Chromium (Cr) | 20.0–22.5% |
| Molybdenum (Mo) | 12.5–14.5% |
| Tungsten (W) | 2.5–3.5% |
| Iron (Fe) | 2.0–6.0% |
| Cobalt (Co) | 2.50% max. |
| Manganese (Mn) | 0.50% max. |
| Vanadium (V) | 0.35% max. |
| Silicon (Si) | 0.08% max. |
| Carbon (C) | 0.015% max. |
| Phosphorus (P) | 0.020% max. |
| Sulfur (S) | 0.020% max. |

## Minimum Mechanical Properties (ASTM B574, solution annealed)

| Condition and Grade | Tensile Strength, min. | Yield Strength (0.2%), min. | Elongation, min. |
|---|---|---|---|
| Solution Annealed — UNS N06022 | ≥690 MPa (100 ksi) | ≥310 MPa (45 ksi) | 45% |

## Physical Properties (Approx.)

| Property | Value |
|---|---|
| Alloy | Hastelloy C-22 |
| UNS | N06022 |
| Werkstoff | 2.4602 |
| Density | Approx. 8.69 g/cm³ |
| Melting Range | Approx. 1357–1399 °C |
| Elastic Modulus | Approx. 206 GPa |
| Thermal Conductivity | Approx. 10.1 W/m·°C at 20 °C |
| Specific Heat | Approx. 414 J/kg·°C |
| Expansion Coefficient | Approx. 12.4 µm/m·°C (20–100 °C) |
| Electrical Resistivity | Approx. 1.14 µΩ·m at 20 °C |
| Alloy Type | Nickel-chromium-molybdenum with tungsten |
| Strengthening | Solid solution and cold work |
| Magnetic Behaviour | Practically non-magnetic at ambient temperature |

## Standards and Designations

| Standard | Product or Application |
|---|---|
| ASTM B574 / ASME SB574 | Nickel-chromium-molybdenum-tungsten rod and bar, UNS N06022 in the scope table |
| DIN 17752 / ISO 9723 | German and international bar documents |
| VdTÜV 479 / NACE MR0175 | German material sheet and sour-service qualification |

## Heat Treatment (solution anneal and release)

| Condition | Typical Treatment |
|---|---|
| Solution Annealed | Held at 1121 °C, then water quenched, because slow cooling would let intermetallic phases form |
| Hot-Worked | Delivered as-rolled or as-forged, with the anneal agreed where the order calls for it |
| Cold-Drawn | Drawn after annealing, with the reduction recorded so the higher proof stress is documented |
| Stress-Relief Warning | A conventional 650 °C relief cycle destroys the corrosion resistance of this grade, so residual-stress work needs a full anneal instead |
| Sour-Service Release | NACE MR0175 orders carry a per-lot hardness record against the 35 HRC ceiling |

## Surface Finishes (Bright Bar)

| Surface Condition | Typical Use |
|---|---|
| Cold Drawn | Drawn stock giving this bright bar close diameter control and a smooth bright skin. |
| Bright Annealed | Protective-atmosphere annealing leaves this bright bar oxide-free and ready to redraw. |
| Polished | Reduced roughness on this bright bar for pharmaceutical 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. Designations, heat-treatment conditions, and surface finishes are confirmed at quotation.