

Hastelloy B-2 Centreless-Ground Rod (UNS N10665 / W.Nr. 2.4617) — Technical Data Sheet

Centreless-Ground Rod supplied to ASTM B335 and ASME SB335 for UNS N10665 — that document sets one solution-annealed condition for rod from 7.94 to 88.9 mm, its mechanical table carries no hardness ceiling against this grade, and DIN 17752 plus ISO 9723 cover the German and international bar routes.

Chemical Composition — ASTM B335 limits, UNS N10665

| Element         | Content    |
|-----------------|------------|
| Nickel (Ni)     | Balance    |
| Molybdenum (Mo) | 26.0–30.0% |
| Iron (Fe)       | 2.0% max.  |
| Chromium (Cr)   | 1.0% max.  |
| Cobalt (Co)     | 1.00% max. |
| Manganese (Mn)  | 1.0% max.  |
| Carbon (C)      | 0.02% max. |
| Silicon (Si)    | 0.10% max. |
| Phosphorus (P)  | 0.04% max. |
| Sulfur (S)      | 0.03% max. |

Minimum Mechanical Properties (ASTM B335, solution annealed)

| Condition and Grade            | Tensile Strength, min. | Yield Strength (0.2%), min. | Elongation, min. |
|--------------------------------|------------------------|-----------------------------|------------------|
| Solution Annealed — UNS N10665 | ≥760 MPa (110 ksi)     | ≥350 MPa (51 ksi)           | 40%              |

Physical Properties (Approx.)

| Property                        | Value                                  |
|---------------------------------|----------------------------------------|
| Alloy                           | Hastelloy B-2                          |
| UNS                             | N10665                                 |
| Werkstoff                       | 2.4617                                 |
| Density                         | Approx. 9.22 g/cm³                     |
| Melting range                   | Approx. 1330–1380 °C                   |
| Modulus of elasticity           | Approx. 217 GPa                        |
| Thermal conductivity at 0 °C    | Approx. 11.1 W/m·K                     |
| Thermal conductivity at 100 °C  | Approx. 12.2 W/m·K                     |
| Specific heat at 100 °C         | Approx. 389 J/kg·K                     |
| Electrical resistivity at 20 °C | Approx. 1.37 µΩ·m                      |
| Thermal expansion, 20–93 °C     | Approx. 10.3 µm/m·K                    |
| Magnetic behaviour              | Non-magnetic in the annealed condition |
| Strengthening route             | Cold work only                         |

Standards and Designations

| Standard               | Product or Application                                                   |
|------------------------|--------------------------------------------------------------------------|
| ASTM B335 / ASME SB335 | Nickel-molybdenum alloy rod, 7.94–88.9 mm, UNS N10665 in the scope table |
| DIN 17752 / ISO 9723   | German and international bar documents                                   |
| ASTM B564 / ASME SB564 | Forged bar and heavier sections above the rod size ceiling               |

Heat Treatment (solution anneal and release)

| Condition             | Typical Treatment                                                                                                |
|-----------------------|------------------------------------------------------------------------------------------------------------------|
| Solution Annealed     | Held at 1065–1095 °C, then water quenched, because Ni4Mo forms between 540 and 815 °C                            |
| 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 relief pass inside the 540–815 °C band precipitates Ni4Mo, so residual-stress work needs a full anneal instead |
| Post-Weld Anneal      | Severe acid duty calls for a solution anneal at 1050–1100 °C and a water quench after welding                    |

Surface Finishes (Centreless-Ground Rod)

| Surface Condition | Typical Use                                                                                                  |
|-------------------|--------------------------------------------------------------------------------------------------------------|
| Centreless Ground | Ground diameter and straightness on this centreless-ground rod for pump spindles and metering plungers.      |
| Bright Annealed   | Protective-atmosphere annealing leaves this centreless-ground rod oxide-free for instrument and vacuum work. |
| Peeled            | A machined skin on this centreless-ground rod with a uniform diameter for further turning.                   |

Typical Supply Dimensions — Centreless-Ground Rod

| Product Form               | Typical Supply | Length              |
|----------------------------|----------------|---------------------|
| Centreless-Ground Rod      | 3–100 mm dia.  | Cut to length       |
| Bright-Annealed Ground Rod | 6–60 mm dia.   | Cut to length       |
| Polished Ground Rod        | 6–80 mm dia.   | Cut to length       |
| Peeled Ground Rod          | 20–100 mm dia. | Cut to length       |
| Cut-to-Length Ground Rod   | 3–100 mm dia.  | Sawn to your length |
| Custom Ground Rod          | To drawing     | Custom              |