



Description

Niobium, or Columbium, has a hardness similar to pure titanium and a ductility comparable to iron. It is physiologically inert, hypoallergenic, and can be heated then anodized to produce iridescent colours, making it a popular choice for prosthetics, implants and jewelry. Niobium becomes a superconductor at cryogenic temperatures and has the greatest magnetic penetration depth of any element. It oxidizes at temperatures above 400°C and its reactivity with oxygen requires it to be worked in a vacuum or inert atmosphere. Niobium is also added to iron or nickel to produce super alloys in the aerospace, medical and electronics industries.

Applications

Jet engines, rocket nozzles, semi-conductor equipment, reaction vessels, jewellery, capacitors, arc-tube seals of sodium vapor lamps, high voltage wire for reactor modules, nuclear reactors, superconducting magnets.

PHYSICAL PROPERTIES

Density	8.6g/cm ³
Melting point	2468°C
Electrical resistivity	15.1 microhm-cm
Thermal conductivity	52.3 W/mK
Recrystallisation temperature	800°C
Specific heat	0.26 J/g°C
Coefficient of linear thermal expansion	7.1 x 10 ⁻⁶ /°C

MECHANICAL PROPERTIES

Tensile strength	275-585 MPa
Yield Strength	207 MPa
Elongation at break	5-30%
Hardness (Vickers)	80-120
Modulus of elasticity	103 GPa

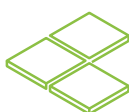
FORMS AVAILABLE:



Coil



Sheet



Plate



Rod



Bar

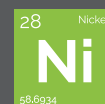


Wire

SPECIFICATIONS

ASTM	B392-18 (bar, rod & wire)
ASTM	B393 - 18 (strip, sheet & plate)
AMS	7850
UNS	R04200
UNS	R04210

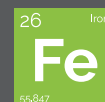
CHEMISTRY



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28 Nickel Ni 58.6934	27 Cobalt Co 58.933	26 Iron Fe 55.847
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More than just metal

We're one of Europe's leading suppliers of premium quality refractory metals and alloys, soft magnetic alloys, and controlled expansion alloys. We hold a large stock of UK-certified, materials, all with full chain custody. With a deep technical understanding, comprehensive workshop facilities, and top accreditations, we help our customers get more from their materials.

Knowledge and advice

Our team understands exactly how our products are made, how they will behave in different situations, and how they should perform. Their knowledge and expertise helps save time, effort and cost by ensuring that all materials are sourced, processed and tested to perform in the most effective way.

We partner with leading academic institutions and scientific organisations that add value to our service and help develop solutions to the challenges impacting our customers. We're keen to share these unique insights in order to deliver practical operational improvements.

Workshop and machining

Our purpose-built facilities are centred around a fully equipped workshop designed to address almost any customer request:

- CNC Proturn RLX 1630 lathe for high precision rod and bar processing
- Saws to cut bars, plate and billets from Ø 2mm to Ø 270mm
- Guillotines for sheet and coil
- Grinding machinery
- De-coiler to check for imperfections before shipping
- Coil handling equipment to inspect product before dispatch
- Water jet and laser cutting
- Heat treatments

Quality control

All orders are fully tested before shipping.

Our state-of-the-art metrology lab features:

- Micrometers, verniers and gauges for all applications
- Surface roughness tester
- Straightness and roundness testing apparatus
- Magnetometers for measuring inductance, coercive and saturation
- Capabilities for evaluating properties such as CTE, tensile and elongation.

Best practice

We are committed to continuous improvement, reflected in our achievement of internationally-recognised industry accreditations. These are the foundation of best practice and provide you with solid assurances of competence and integrity:

- **AS9120** certified – a top aerospace industry award.
- **Green Mark level 1** accreditation – an environmental certification that supports greater sustainability.
- **JOSCAR** (the Joint Supply Chain Accreditation Register) accredited – an award that helps to streamline procurement processes.
- **Cyber Essentials** certified – a government-backed programme that provides security assurance of a supplier's digital infrastructure.



Discover how we can **optimise** operational performance

Contact chris@nicofe.com



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