

NICKEL 270

Controlled Expansion Alloys



Description

Nickel 270 is a very pure material that has a lower coefficient of expansion, electrical resistivity, Curie temperature, and better ductility than found in other grades of Nickel.

Applications

Fluorescent lamps, heat exchangers, heat shields, hydrogen thytrons, cathode shanks, anodes, passive cathodes.

PHYSICAL PROPERTIES		MECHANICAL PROPERTIES	
Density	8.88 g/cm ³	Tensile strength	345 Mpa
Curie temperature	358°C	Yield strength	110 Mpa
Melting point	1454°C	Elongation	50%
Specific heat	0.46 J/g°C	Hardness	30 HRB
Thermal coefficient of expansion (25°C to 100°C)	13 x 10 ⁻⁶ /°C	Modulus of elasticity	207 Gpa

TENSILE PROPERTIES & HARDNESS				
Form and condition	Tensile strength MPa	Yield strength MPa	Elongation %	Hardness HRB
Rod & bar, hot finished	345	110	50	40
Strip, cold rolled	655	62	4	95
Strip, annealed	345	110	50	35
Sheet, annealed	345	110	45	30

THERMAL & ELECTRICAL PROPERTIES			
Temperature °C	Mean linear expansion (from 21°C to temp shown) µm/m · K	Thermal conductivity W/m · K	Electric resistivity nΩm
-196	-	-	6.6
-129	-	108	23.0
-18	-	91	59.8
27	-	-	74.8
93	13.3	79	106.4
204	13.7	70	169.6
316	14.4	-	254.3
427	15.1	59	329.2
538	15.5	62	364.1
649	15.8	65	395.6
760	16.2	67	425.6
871	16.6	70	448.8
982	-	73	480.4
1093	-	-	510.4

FORMS AVAILABLE:



Coil



Sheet



Plate



Rod



Bar

All information is presented in good faith and based on published details. Nicofe Ltd is not responsible for the accuracy of this information or the suitability of the material for a particular application.

SPECIFICATIONS

ASTM F3 Grade 4

UNS N02270

CHEMISTRY

28 Nickel
Ni 99.97%

27 Cobalt
Co 0.001%

26 Iron
Fe 0.005%

Cu 0.001%

Mn 0.001%

Mg 0.001%

C 0.02%

Si 0.001%

S 0.001%

Ti 0.001%

Cr 0.001%

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



Nicofe Materials

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