Nicofe MATERIALS

ALLOY 48

Controlled Expansion Alloys

datasheet

Description

A controlled expansion alloy consisting of approximately 48% Nickel, balance Iron. Used in a wide variety of electronic applications, especially for glass and ceramic seals.

AKA: Pernifer® 48 and NILO® 48.

Applications

Glass to metal seals for a wide variety of electronic tubes and hermetic devices.

PHYSICAL PROPERTIES	
Density	8.25g/cm³
Specific gravity	8.25
Curie temperature	471˚C
Melting point	1450˚C
Electrical resistivity	47 microhm-cm
Thermal conductivity	16.7 W/mK

MECHANICAL PROPERTIES	
Tensile strength	520 MPa
Yield strength	260 MPa
Elongation	43%
Hardness	80 HRB
Modulus of elasticity	160 kMPa

LINEAR COEFFICIENT OF PHYSICAL THERMAL EXPANSION	
Temperature ˚C	**Temperature CTE (ppm/˚C)**
30-300	8.8
30-400	8.8-9.2
30-450	9.4
30-500	9.6-10.3
30-600	10.4
30-700	11.3
30-800	12.1
30-900	13.0
30-1000	13.9

FORMS AVAILABLE:

Coil Sheet Plate Rod Bar Wire

SPECIFICATIONS

ASTM	F30
MIL	1-23011 CL3
AMS	1-23011 CL3
UNS	K94800

CHEMISTRY

28 Nickel Ni 58.6934	48%
27 Cobalt Co 58.933	–
26 Iron Fe 55.847	Balance
C	0.05%
Si	0.3%
S	0.025%
P	0.25%
Mn	0.8%
Cr	0.25%
Al	0.10%

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27 Cobalt Co 58.933
26 Iron Fe 55.847

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

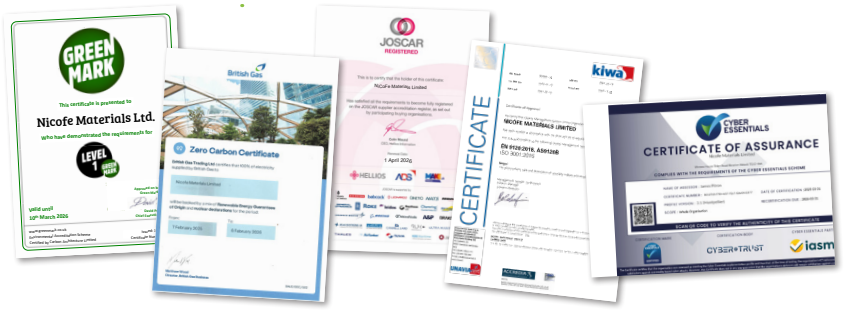
All orders are fully tested before shipping.
Our state-of-the-art metrology lab features:

- 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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