



Description

Hiperco® 50 is an iron-cobalt vanadium soft magnetic alloy with the highest magnetic saturation of any commercial alloy and greater mechanical strength than other soft magnetic alloys. It is manufactured with a small amount of Niobium to control grain growth which allows for various levels of mechanical strength and magnetic properties.

AKA: AFK 502, VACOFLUX 50, Permendur 49, Rotelloy 3

Applications

Motors and generators for maximum torque density and minimum losses, for actuators (speaker, haptic, sensor devices) found in consumer electronic applications offers highest forces, magnetic bearings.

PHYSICAL PROPERTIES	
Density	8.12 g/cm³
Specific gravity	8.12
Curie temperature	938°C
Melting Point	1427°C
Electrical resistivity	41 microhm-cm
Thermal conductivity	29 W/mK
Thermal expansion (25°C to 450°C)	10.2 ppm/°C

MECHANICAL PROPERTIES			
	Cold rolled annealed	Soft magnetic annealed	Std mechanical annealed
Tensile strength	1310 MPa	792 MPa	930 MPa
Yield strength	1270 MPa	331 MPa	414 MPa
Elongation	2%	5-15%	5-15%
Hardness	36 Rockwell C	-	-
Modulus of elasticity	207 GPa		

DC MAGNETIC PROPERTIES								
Heat treatment	Coercivity (A/m) from 8kA/m	DC relative permeability μ max	B (TESLA) A/m					
			400	800	1600	4000	8000	16000
0.356mm strip								
Standard ferromagnetic anneal	40	19200	2.12	2.19	2.23	2.27	2.28	2.30
Standard mechanical anneal	125	7900	2.01	2.12	2.19	2.25	2.28	2.30
0.15mm strip								
Standard ferromagnetic anneal	50	15000	2.03	2.14	2.21	2.27	2.28	2.30
Standard mechanical anneal	125	7400	1.99	2.11	2.18	2.25	2.28	2.29

AC CORE LOSS BY HEAT TREATMENT							
Heat treatment	0.356mm strip Specific core loss			0.15mm strip Specific core loss			B (TESLA)
Standard ferromagnetic anneal	60 Hz	400 Hz	1000 Hz	60 Hz	400 Hz	1000 Hz	
	1.11	13.3	54.1	1.17	10.2	33.9	1.0
	2.03	29.8	142.0	2.08	19.2	65.8	1.5
	3.29	56.7	301.0	3.32	30.9	109.0	2.0
Standard mechanical anneal	1.11	13.3	54.1	2.17	16.7	46.2	1.0
	2.03	29.8	142.0	3.96	31.1	93.8	1.5
	3.29	56.7	301.0	6.54	51.4	157.0	2.0

FORMS AVAILABLE:



Coil



Strip

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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 A801 Alloy Type 1

MIL A47182

UNS R30005 Type 1

CHEMISTRY

28 Nickel Ni 58.6934	-
27 Cobalt Co 58.933	48.5%
26 Iron Fe 55.847	Balance
V	1.9%
Nb	0.05%
C	0.01%

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

Unit 8D, Torr View, Torr Quarry Industrial Estate, East Allington, Totnes TQ9 7QQ

01548 858770 | sales@nicofe.com | www.nicofe.com