

# Hiperco® 50A

## Soft Magnetic Alloys

### DESCRIPTION

Hiperco® 50A, an iron-cobalt vanadium soft magnetic alloy provides superior magnetic properties when compared to other soft magnetic alloys. Hiperco 50A key properties include the highest magnetic saturation of 24 kilogauss while sustaining low core loss. Often this alloy can be found in motors and generators to improve the motor's power density and efficiency while providing a reduction of motor size.

### APPLICATIONS

Motors and generators; Actuators; Specialty transformers; Electromagnetic pole pieces.

#### TYPICAL PHYSICAL PROPERTIES

Density	lb/in <sup>3</sup>	0.293
Specific Gravity	68° F	8.12
*Curie Temperature	°F	1720
	°C	938
Electrical Resistivity (70° F)	ohm-cir mil/ft	240.7
	(21° C)	ohm-m
Elastic Modulus	ksi	30x10 <sup>3</sup>
	GPa	206.8
Thermal Conductivity	BTU-in/sq.ft-hr-°F	206.8
	W/cm °C	29.83
Mean Coefficient of Thermal Expansion	77 to 392°F	5.3x10 <sup>-6</sup> length/length/°F
	77 to 752°F	5.6x10 <sup>-6</sup> length/length/°F
	77 to 1112°F	5.8x10 <sup>-6</sup> length/length/°F
	77 to 1472°F	6.3x10 <sup>-6</sup> length/length/°F

\*Curie temperature is phase transition from magnetic to non-magnetic phase.

Source: Carpenter Electrification® Hiperco 50A Datasheet v05-20

#### FORMS | SIZES AVAILABLE

Round Bar   Rod	0.510" - 2.750"
Plate*	0.500" - 7.0"
Strip   Coil	0.006" - 0.014"

\*Plate is cut from unannealed billet.

Listed above are our standard stock items. Our inventory fluctuates based on market demands. If you do not see the size or form you require, please call us.

#### TYPICAL MECHANICAL PROPERTIES - 0.014 IN STRIP

HEAT TREATMENT		Cold Rolled Unannealed	Standard Magnetic Anneal
Ultimate Tensile Strength	ksi(MPa)	195 (1344)	72.2 (498)
Yield Strength 0.2%	ksi(MPa)	185 (1276)	30.8 (202)
Elongation	% in 2 in.	1	6.7

Source: Carpenter Electrification® Hiperco 50A Datasheet v05-20

#### TYPICAL DC MAGNETIC PROPERTIES - 0.014 IN STRIP

HEAT TREATMENT	COERCIVITY (A/m) from 8 kA/m	DC RELATIVE Permeability μ max	B (TESLA) A/m					
			400	800	1600	4000	8000	16000
Standard Ferromagnetic Annealing	30	22000	2.12	2.19	2.23	2.27	2.28	2.30

Source: Carpenter Electrification® Hiperco 50A Datasheet v05-20

#### TYPICAL DC MAGNETIC PROPERTIES - BAR (BULK MATERIAL)

HEAT TREATMENT	COERCIVITY (A/m) from 8 kA/m	DC RELATIVE Permeability μ max	B (TESLA) A/m					
			400	800	1600	4000	8000	16000
Standard Ferromagnetic Annealing	209	3350	1.49	1.80	2.00	2.18	2.25	2.30

Source: Carpenter Electrification® Hiperco 50A Datasheet v05-20

#### TYPICAL AC CORE LOSS BY HEAT TREATMENT - 0.014 IN STRIP

HEAT TREATMENT	SPECIFIC CORE LOSS		
	60 Hz	400 Hz	1000 Hz
Standard Ferromagnetic Annealing	0.94	12.7	55.6
	1.75	30.0	151.0
	2.73	56.8	313.0

Source: Carpenter Electrification® Hiperco 50A Datasheet v05-20

### CHEMISTRY %

(Single figures are nominal except where noted.)

Cobalt 48.5, Vanadium 2.0, Niobium 0.01, Carbon 0.001, Iron Balance

### SPECIFICATIONS

ASTM A801 Alloy Type 1 • MIL A 47182

# Special Purpose Alloys & Metals From Stock

## Controlled Expansion | Glass Sealing

Ed Fagan Inc. supplies the highest quality metals and alloys including materials from Carpenter Technology Corp.

### Kovar® | ASTM F15 Alloy

Forms: Plate, Round Bar/Rod, Sheet, Strip/Coil  
Trade Names: Kovar®, Pernifer® 2918, NILO K®, DilverP1®

### Alloy 42/46/48/52

Forms: Plate, Round Bar/Rod, Sheet, Strip/Coil  
Trade Names: Pernifer®40, 46, 48, 50; NILO® 42, 46, 48, 50;  
Glass Sealing 42, 46, 48, 52

### Free-Cut Invar "36"® Alloy

Forms: Round Bar/Rod

### Invar "36"® Alloy

Forms: Plate, Sheet  
Trade Names: Pernifer® 36, NILO® 36, Invar

### Super Invar 32-5®

Forms: Plate, Round Bar/Rod, Sheet

## Refractory Metals and Alloys

Ed Fagan Inc. is your leading source for quality refractory metals & alloys. We stock DFARS Molybdenum, ML/MLS/MLR, Molybdenum TZM, Tantalum & Tungsten manufactured from Plansee.

### Molybdenum

Forms: Plate, Round Bar/Rod, Sheet/Coiled Sheet, Threaded Rod/Nuts, Wire

### Molybdenum Lanthanum Oxide (ML)

Forms: Sheet – Stress Relieved, Recrystallized

### Molybdenum TZM

Forms: Plate, Round Bar/Rod, Sheet

### Niobium

Forms: Plate, Round Bar/Rod, Sheet, Strip/Coil, Wire

### Rhenium

Forms: Plate, Round Bar/Rod, Sheet, Strip/Coil

### Tantalum

Forms: Plate, Round Bar/Rod, Sheet, Strip/Coil, Wire

### Tungsten

Forms: Plate, Precision Cut Wire, Round Bar/Rod, Sheet

### Tungsten Alloys

Forms: Blanks, Flats, Parts, Plate/Sheet, Rod, Shapes

## Soft Magnetic Alloys | EMI Shielding & Laminations

Ed Fagan Inc. is a distributor of "EMI shielding alloys" for VDM Metals GmbH the world's leading producer of these alloys.

### EFI Alloy 50

Forms: Round Bar/Rod, Square Bar, Strip/Coil, Wire Rod  
Trade Names: High Permeability 49®, Magnifer® 50

### EFI Alloy 79

Forms: Rectangular Bar, Round Bar/Rod, Sheet, Strip/Coil  
Trade Names: Hipernom, HyMu80®, Magnifer® 7904, Molypermalloy, Permalloy 80®

### Hiperco® 50

Forms: Strip/Coil

### Hiperco® 50A

Forms: Plate, Round Bar/Rod, Strip/Coil

### Hiperco® 50 HS

Forms: Strip/Coil

### Carpenter VimVar Core Iron

Forms: Round Bar/Rod

## Electrical & Electronic Nickels

Ed Fagan Inc. supplies select, commercially pure grades of Nickel in various forms and sizes.

### Electronic Nickels

200/201/205/233/270

Forms: Round Bar/Rod, Sheet, Strip/Coil, Wire

## Alloys and Metals We Distribute

Corrosion Resistant Alloys • High-Temperature Alloys • Stainless Steel  
• Titanium – CP, 6 Al-4V

## Ed Fagan Inc. Services

Slitting, Shearing, Saw Cutting, Grinding, Water Jet Cutting, Laser Cutting,  
Custom Stocking and Consignment Programs

**JUST-IN-TIME DELIVERY:** All of our **standard stock** items can be **shipped within 24-hours** of your order confirmation and most are **shipped the same day**. All materials certified with shipment. For special orders and non-stock materials, contact our sales team for our competitive pricing and delivery lead times.