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55.845

Iron

# Core Iron (VIM VAR)

## Soft Magnetic Alloys

**efi** ED FAGAN INC.  
Special Purpose Alloys  
THE MATERIALS YOU NEED, WHEN YOU NEED THEM

www.edfagan.com | sales@edfagan.com  
toll free 800.348.6268

### DESCRIPTION

Core Iron (VIM VAR) is a low carbon magnetic iron produced using vacuum induction melting plus vacuum arc remelting practices. Other elements commonly found in low carbon irons are held as low as possible to ensure good DC magnetic properties.

This double melting technique controls the distribution of nonmetallic inclusions to a minimum length and frequency so that thin wall sections will not contain leaks due to internal discontinuities. This alloy is also known as Carpenter Consumet Core Iron®.

### APPLICATIONS

Soft magnetic components where vacuum integrity is needed such as power tubes and microwave devices; in addition, relays, solenoids, and magnetic pole pieces for scientific instruments.

### TYPICAL PHYSICAL PROPERTIES

Density	lb/cu in	0.284
Specific Gravity		7.86
Curie Temp	°F	1418
	°C	770
Melting Point	°F	2800
	°C	1538
Electrical Resistivity	μ ohms-cm	13
	ohm-cir mil/ft	78
Thermal Conductivity	W/cm °C	0.73
	BTU-in/sq.ft-hr-°F	508
Specific Heat	Cal/gm°C	0.108
	J/kg-K	452
Thermal Expansion	ppm/°C (25°C to 200°C)	12.6

Source: EFI Master Carpenter VIM VAR Core Iron

### FORMS | SIZES AVAILABLE

Round Bar | Rod 0.500" - 10.250"

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

Tensile Strength	ksi	50
	MPa	345
Yield Strength	ksi	27
	MPa	190
Elongation	% in 2"	45
Typical Hardness Ann.	Rockwell HRB	65
Modulus of Elasticity	ksi	30
	MPa	207

Source: EFI Master Carpenter VIM VAR Core Iron

### TYPICAL DC MAGNETIC PROPERTIES

Saturation Induction - Gauss	21,500
Maximum Relative Permeability	9,400
Coercive Force - Oersteds	1.5
Coercive Field Force - A/m	68
Residual Induction (T)	1.44

Annealed at 843°C for four hours in wet hydrogen. Residual induction (Br) and coercive field strength, (Hcb) are measured from a maximum flux density of 1.5T.

Source: ASTM A848-17 Table x1.1

### MEAN COEFFICIENT OF EXPANSION

Temp Range 25°C to:	Coefficient ppm per °C	Temp Range 25°C to:	Coefficient ppm per °C
100°	12.2	500°	15.5
200°	12.6	600°	15.5
300°	13.6	700°	15.8
400°	14.5		

Source: EFI Master Carpenter VIM VAR Core Iron

### CHEMISTRY %

Commercially Pure, Low Carbon Magnetic Iron

Vanadium, titanium and aluminum are not required but may be added to suppress magnetic aging; if present they shall be analyzed and reported.

### SPECIFICATIONS

ASTM A848 Type 1

769 Susquehanna Avenue, Franklin Lakes, NJ 07417  
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10537 Humbolt Street, Los Alamitos, CA 90720  
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# Special Purpose Alloys & Metals From Stock

**efi** ED FAGAN INC.  
Special Purpose Alloys

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## 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, Sheet, Strip/Coil, Wire  
Trade Names: Kovar®, Pernifer® 2918, NILO K®, DilverP1®

### Alloy 42/46/48/52

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

### Free-Cut Invar "36"® Alloy

Forms: Round Bar, Wire

### Invar "36"® Alloy

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

### Super Invar 32-5®

Forms: Plate, Round Bar, Sheet

## Refractory Metals and Alloys

Ed Fagan Inc. is your leading source for quality refractory metals and alloys. We stock Tungsten, Molybdenum and its alloys in various forms and sizes manufactured from Plansee Group.

### Molybdenum

Forms: Plate, Precision Cut Wire, Round Bar, Sheet/Strip, Spooled Wire, Threaded Rod/Nuts

### Molybdenum Lanthanum Oxide (ML)

Forms: Sheet – Stress Relieved, Recrystallized

### Molybdenum TZM

Forms: Plate, Round Bar

### Niobium

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

### Rhenium

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

### Tantalum

Forms: Round Bar, Sheet

### Tungsten

Forms: Parts (To Specification), Plate, Precision Cut Wire, Round Bar, Sheet

### Tungsten Alloy

Blank Forms: 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, Square Bar, Strip/Coil, Wire  
Trade Names: Alloy 4750, High Permeability 49®, Magnifer® 50

### EFI Alloy 79

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

### Hiperco® 50, Hiperco® 50A, Hiperco® 50 HS

Forms: Plate, Round Bar, Strip/Coil

### Carpenter VimVar Core Iron

Forms: Plate, Round Bar

## 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, 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.

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