

Fe

55.845

Iron

Core Iron (VIM VAR)

Soft Magnetic Alloys



1. 800.348.6268 | sales@efineametals.com
www.efineametals.com

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	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

New Jersey Offices

769 Susquehanna Avenue, Franklin Lakes, NJ 07417
3 Fir Court, Oakland, NJ 07436

Need pricing? We're here to help:
sales@efineametals.com
1.800.348.6268

California Offices

10537 Humboldt Street, Los Alamitos, CA 90720
1847 W. Business Center Drive, Orange, CA 92867