

26	27
Fe 55.845 Iron	Co 58.933194 Cobalt
23	41
V 50.9415 Vanadium	Nb 92.90637 Niobium

Hiperco® 50 HS

Soft Magnetic Alloys



EFINEA

Capabilities Beyond Infinity

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DESCRIPTION

An iron-cobalt-vanadium soft magnetic alloy that exhibits high magnetic saturation, high yield strength and moderate core loss. Niobium is added for grain refinement during mill processing and final heat treating to improve yield strength properties found in traditional Hiperco® 50.

APPLICATIONS

In the manufacture of rotor laminations Hiperco 50 HS strip is applicable in aircraft power generation applications and for magnetic bearings. These laminations are stamped from cold rolled strip and must be final annealed in a protective atmosphere or vacuum environment at a temperature that provides both magnetic and mechanical properties that withstand the high stresses. High-speed motors.

TYPICAL PHYSICAL PROPERTIES

Density	lb/in ³	0.293
Specific Gravity	68 F	8.12
*Curie Temperature	F	1720
	C	938
Electrical Resistivity (70 F) (21 C)	ohm-cir mil/ft	253.0
	ohm-m	42.1
Elastic Modulus	ksi	30x10 ³
	GPa	206.8
Thermal Conductivity	Btu-in/hr/ft ² / F	206.8
	W/m / C	29.83
Mean Coefficient of Thermal Expansion	77 to 392 F	5.3x10 ⁻⁶ length/length/°F
	77 to 752 F	5.6x10 ⁻⁶ length/length/°F
	77 to 1112 F	5.8x10 ⁻⁶ length/length/°F
	77 to 1472 F	6.3x10 ⁻⁶ length/length/°F

*Curie temperature is phase transition from magnetic to non-magnetic phase.
Source: Carpenter Electrification data sheet 5/20

FORMS | SIZES AVAILABLE

Strip | Coil 0.006" - 0.014"

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 - 0.006 IN STRIP

HEAT TREATMENT

TEMPERATURE

°F	°C	TIME, HR	0.2% YIELD STRENGTH		ULTIMATE TENSILE STRENGTH		ELONGATION IN 2 IN (50.8 MM)
			ksi	MPa	ksi	MPa	%
1328	720	1	99	683	185	1280	15
1328	720	2	94	648	177	1220	14
1328	720	4	87	600	156	1080	11
1364	740	1	86	593	168	1160	13
1364	740	2	83	572	167	1150	13
1364	740	4	78	538	158	1090	12
1400	760	1	76	524	149	1030	11
1400	760	2	76	524	166	1140	14
1400	760	4	73	503	145	1000	11
1472	800	4	64	441	142	979	11

The tensile properties are for strips heat treated and tested at room temperature. All heat treatments conducted in batch type furnaces (1 hour heat up time) in dry hydrogen followed by cooling rate of 180 F/hr.
Source: Carpenter Electrification data sheet 5/20

TYPICAL DC MAGNETIC PROPERTIES

1.50 IN O.D. X 1.25 IN I.D. RING LAMINATIONS
ASTM METHOD A596/A596M

0.2% YIELD STRENGTH	FLUX DENSITY AT INDICATED MAGNETIC FIELD STRENGTH										
	10 Oe		20 Oe		50 Oe		100 Oe		200 Oe		
	800 A/m		1600 A/m		4000 A/m		8000 A/m		16000 A/m		
ksi	MPa	kG	T	kG	T	kG	T	kG	T	kG	T
73	503	19.3	1.93	20.7	2.07	21.9	2.19	22.3	2.23	23.0	2.30
86	593	19.0	1.90	20.3	2.03	21.8	2.18	22.3	2.23	22.9	2.29
99	683	18.2	1.82	19.9	1.99	21.5	2.15	22.3	2.23	22.9	2.29

Source: Carpenter Electrification data sheet 5/20

CHEMISTRY

% (Single figures are nominal except where noted.)

Cobalt 48.75, Vanadium 1.90, Niobium 0.30, Carbon 0.01, Iron Balance



SPECIFICATIONS

ASTM A801 Alloy Type 1

New Jersey Offices

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Need pricing? We're here to help:
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