Typical Magnetic Performance Guide

C-Cores & Uncased Toroids								
Material Description	Material Type Letter	Thickness (Inches) typical	Space Factor min	Watts/lb max	VA/lb max	Test B (kG)	Test Freq (Hz)	Gap VA per inch2 @ .001" max
3% Silicon Steel Silectron®1	A	.001"	.83	12.0	20.3	12.5	400	16.3
	A&B	.002"	.89	10.0	15.0	15.0	400	29.2
	A	.004"	.90	10.0	13.1	15.0	400	29.9
	B&C	.004"	.90	15.0	39.5	17.6	400	41.1
	B	.007"	.92	15.0	39.5	17.6	400	43.0
	A	.009"	.95	0.89	1.7	15.0	60	5.0
	B	.009"	.95	0.89	1.5	17.6	60	6.9
	T	.011"	.95	0.89	1.7	15.0	60	5.0
	B	.011"	.95	0.89	1.5	17.6	60	6.9
	A	.012"	.95	0.89	1.7	15.0	60	5.0
80% Nickel-Iron Supermalloy®2	D	.0005"	.65	12.0	18.0	5.0	10,000	57.7
	D	.001"	.83	14.0	21.0	5.0	10,000	70.6
	D	.002"	.89	20.0	30.0	5.0	10,000	81.2
	D	.004"	.90	15.0	22.0	5.0	5000	41.5
50% Nickel-Iron Deltamax®3	G	.0005"	.65	30.0	40.0	10.0	5000	115.3
	G	.001"	.83	37.0	47.0	10.0	5000	141.2
	G	.002"	.89	55.0	70.0	10.0	5000	162.4
	G	.004"	.90	3.5	6.0	10.0	400	13.0
50% Cobalt-Iron Supermendur®4	J	.002"	.89	20.0	72.0	20.0	400	52.0
	J	.004"	.90	19.0	66.0	21.0	400	58.6
Metglas®5 2605SA1	L	.001"	.82	16.5	N/A	2.0	20,000	
Nanocrystalline Prime	M	.0007" & .0005"	.78	5.5	N/A	2.0	20,000	
Nanocry. FT3-W	MB	.0007"	.78	5.5	N/A	2.0	20,000	

B (kG) is flux density in kilogauss. Watts/lb & VA/lb are power loss and excitation VA when measured at the indicated flux (B) and frequency (Hz) under sine wave excitation. Gap VA for a 0.001" total air gap was calculated using the following formula: Gap VA = 4.1 × 10-4 × B^2 × frequency (Hz) × SF^2 × Ag.

Cores under 25lbs use 0.001" air gap and those in excess of 25lbs use 0.002" air gap. Total core watts = material watts/lb × core wgt in lbs. Total core
excitation VA = material VA/lb × core wgt in lbs + gap VA. Note: Odd or small core geometry may impact performance.

E-Cores								
3% Silicon Steel Silectron®1	A	.004"	.90	12.0	22.7	15.0	400	51.8
	B&C	.004"	.90	18.0	68.4	17.6	400	71.0
	B	.007"	.92	18.0	68.4	17.6	400	74.0
	B	.009"	.95	1.1	4.0	17.6	60	11.9
	A	.012"	.95	1.1	2.9	15.0	60	8.7
	T	.011"	.95	1.1	2.9	15.0	60	8.7
	B	.011"	.95	1.1	4.0	17.6	60	11.9
50% Cobalt-Iron Supermendur®4	J	.004"	.90	22.0	120.0	21.0	400	101.0

Total 3-phase core excitation VA = material VA/lb × core wgt in lbs + gap VA. VA for a total air gap of 0.0015" was calculated with the following formula: Gap VA = 6.15 × 10-4 × B^2 x frequency (Hz) × SF^2 × Ag. E-cores under 25 lbs use 0.0015" total air gap, E-cores over 25lbs use total air gap of 0.003".

Note: Odd or small core geometry may impact performance.

1. Silectron® is a registered trademark of Allegheny Ludlum Steel Corp.
2. Supermalloy® is the discontinued product name of Western Electric Co.
3. Deltamax® is the discontinued product name of Alleghney Ludlum Steel Corp.
4. Supermendur® is the discontinued product name of Carpenter Technology.
5. Metglas® is a registered trademark of Metglas, Inc.
6. Finemet® is a registered trademark of Hitachi Metals Corp.
7. Vitroperm® is a registered trademark of Vacuumschmelze GmbH.

We will gladly test cores to your specific needs