

## CORE LOSS INFORMATION

Included on Pages 2.4-2.10 are material characteristics for the various **Magnetics** power and inductor materials. For computer programming purposes, the core loss curves can be represented by the equation below. The factors indicated in the chart are split into discrete frequency ranges, so that the equation offers a close approximation to the core loss curves on the above pages.

$$\text{CORE LOSS EQUATION: } P_L = af^c B^d$$

$P_L$  is in mW/cm<sup>3</sup>

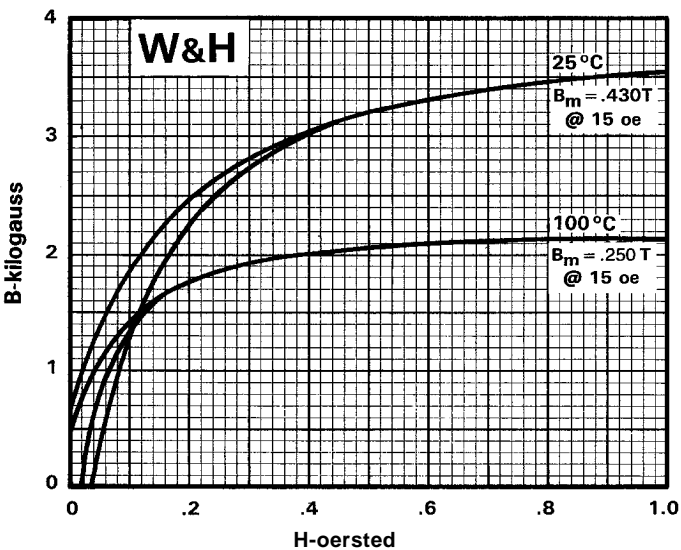
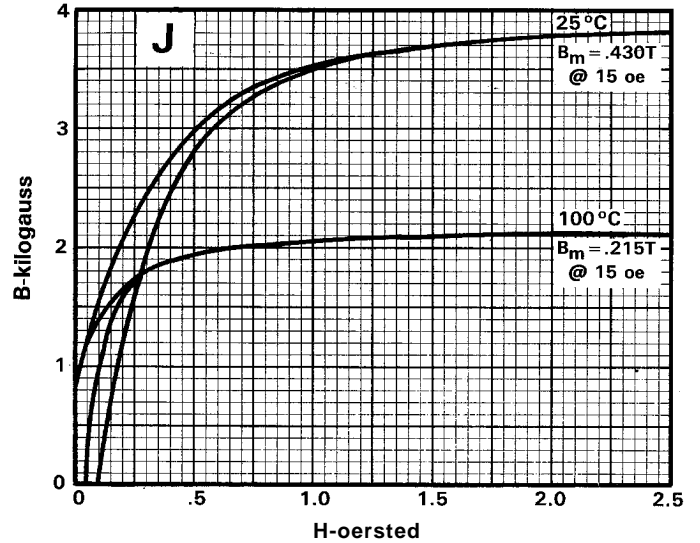
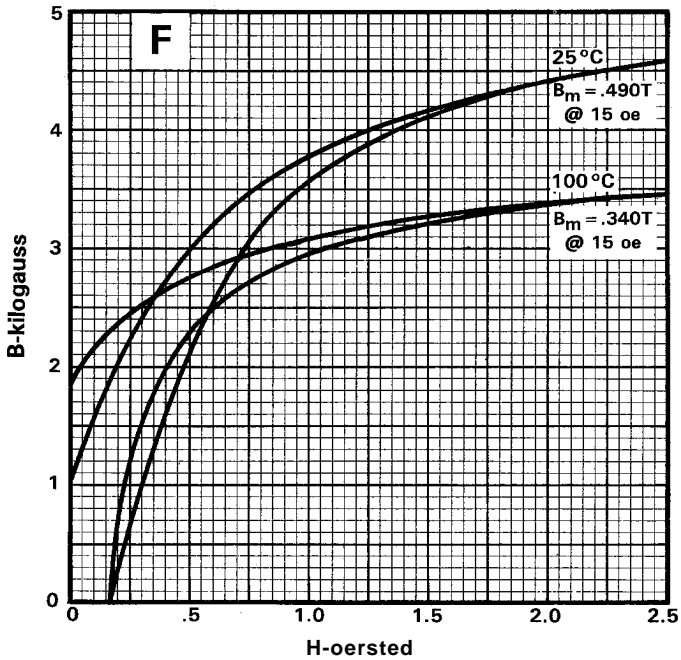
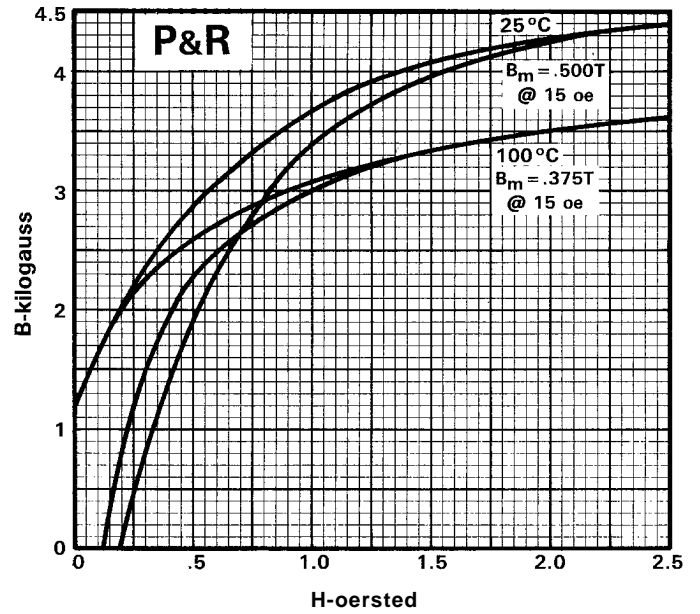
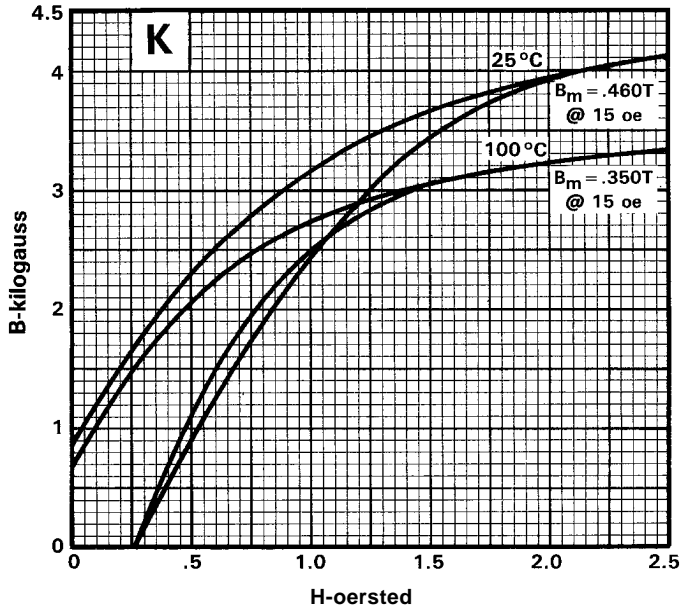
B is in kG

f is in kHz

### FACTORS APPLIED TO THE ABOVE FORMULA

		a	c	d
K Material	f < 500 kHz	0.0530	1.60	3.15
	500 kHz ≤ f < 1 MHz	0.00113	2.19	3.10
	f ≥ 1 MHz	1.77 * 10 <sup>-9</sup>	4.13	2.98
R Material	f < 100 kHz	0.074	1.43	2.85
	100 kHz ≤ f < 500 kHz	0.036	1.64	2.68
	f ≥ 500 kHz	0.014	1.84	2.28
P Material	f < 100 kHz	0.158	1.36	2.86
	100 kHz ≤ f < 500 kHz	0.0434	1.63	2.62
	f ≥ 500 kHz	7.36 * 10 <sup>-7</sup>	3.47	2.54
F Material	f ≤ 10 kHz	0.790	1.06	2.85
	10 kHz ≤ f < 100 kHz	0.0717	1.72	2.66
	100 kHz ≤ f < 500 kHz	0.0573	1.66	2.68
	f ≥ 500 kHz	0.0126	1.88	2.29
J Material	f ≤ 20 kHz	0.245	1.39	2.50
	f > 20 kHz	0.00458	2.42	2.50
W Material	f ≤ 20 kHz	0.300	1.26	2.60
	f > 20 kHz	0.00382	2.32	2.62
H Material	f ≤ 20 kHz	0.148	1.50	2.25
	f > 20 kHz	0.135	1.62	2.15

# B vs. H Curves (dc)



CONVERSION TABLE

Multiply number of	by	to obtain
Oersteds	79.5	A/m
Oersteds	.795	A/cm
Gausses	.1	milli Teslas
Gausses	$10^{-4}$	Teslas
Teslas	$10^4$	Gausses