

## GENERAL MATERIAL PROPERTIES

Material Mix No.	Reference Permeability ( $\mu_r$ )	Material Density ( $\text{g/cm}^3$ )	Relative Cost	Color Code
-2	10	5.0	2.7	Gray
-8	35	6.5	5.0	Gray/White
-18	55	6.6	3.4	Green
-26	75	7.0	1.0	Yellow/White
-28	22	6.0	1.9	Gray/Green
-33	33	6.3	1.6	Gray/Yellow
-38	85	7.1	1.1	White/Green
-40	60	6.9	1.0	Green/Yellow
-52	75	7.0	1.4	Green/Blue

CORE LOSS COMPARISON ( $\text{mW/cm}^3$ )\*

## PERMEABILITY WITH DC BIAS

Material Mix No.	60 Hz	1kHz	10kHz	50kHz	100kHz	500kHz	HDC = 50 oersteds	
	@5000G	@1500G	@500G	@225G	@140G	@50G	% $\mu_0$	$\mu_{\text{effective}}$
-2	19**	32**	32**	28	19	12	100	10.0
-8	45	64	59	50	36	28	91	31.9
-18	48	72	71	63	46	37	74	40.7
-26	33	60	75	89	83	139	51	38.3
-28	38	80	120	164	158	247	91	20.0
-33	37	80	126	182	180	291	84	27.7
-38	31	57	72	99	103	217	51	43.4
-40	29	62	93	130	127	224	62	37.2
-52	30	56	68	72	58	63	59	44.3

\* Revised from previous issues due to refined analysis of data.  
\*\* Low frequency core loss is extrapolated from data measured at high frequency.

## MATERIAL APPLICATIONS

Typical Application	-2	-8	-18	-26	-28	-33	-38	-40	-52
Light Dimmer Chokes				X			X	X	
60 Hz Differential-mode EMI Line Chokes				X			X	X	X
DC Chokes: <50kHz or low Et/N				X	X	X	X	X	
DC Chokes: $\geq$ 50kHz or higher Et/N		X	X						X
Power Factor Correction Chokes: <50kHz				X	X	X		X	
Power Factor Correction Chokes: $\geq$ 50kHz	X	X	X						X
Resonant Inductors: $\geq$ 50kHz	X								

## MATERIAL DESCRIPTION

**-2 Material** The low permeability of this material will result in lower operating AC flux density than with other materials with no additional gap-loss.

**-8 Material** This material has low core loss and good linearity under high bias conditions. A good high frequency material. The highest cost material.

**-18 Material** This material has low core loss similar to the -8 Material with higher permeability and a lower cost. Good DC saturation characteristics.

**-26 Material** The most popular material. It is a cost-effective general purpose material that is useful in a wide variety of power conversion and line filter applications.

**-28 Material** The good linearity, low cost, and relatively low permeability of this material make it popular in large sizes for high power UPS chokes.

**-33 Material** An inexpensive alternate to the -8 Material for applications where high frequency core loss is not critical. Good linearity with high bias.

**-38 Material** A higher permeability alternate to -26 Material. A low cost material best used at line frequency.

**-40 Material** The least expensive material. It has characteristics quite similar to the very popular -26 Material. Popular in large sizes.

**-52 Material** This material has lower core loss at high frequency and the same permeability as the -26 Material. It is very popular for high frequency choke designs.