

**Magnaperm<sup>®</sup>** High Permeability Toroidal Cores are manufactured with cobalt-based Metglas<sup>®</sup> amorphous alloy 2714A for high frequency applications.

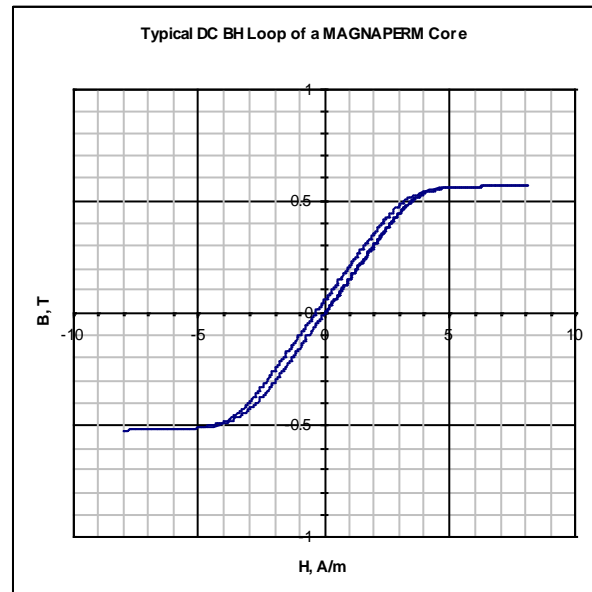
These flat loop toroidal cores offer a unique combination of ultra-high permeability, high saturation flux density and extremely low core loss for electronic component designers.

These properties make Metglas<sup>®</sup> Magnaperm<sup>®</sup> cores

ideal for a diverse range of applications such as:

- EMI common mode filtering
- Telecommunications & data communications interface transformers
- High accuracy current transformers
- High accuracy pulse transformers
- Ground fault protection devices

*Standard sizes are available from 9.6 mm to 34.1 mm OD and the possibility of manufacturing custom sizes also exists. Core coatings meeting UL94V-0 and temperature class F are available upon request.*



#### Benefits

- Higher initial permeability – which reduces the number of turns
- High permeability over a wide range of operating frequencies
- High attenuation – reduces the need for multi stage filtering
- Low profile – enabling weight and volume reduction up to 50%

**Physical Properties Metglas<sup>®</sup> Alloy 2714A**

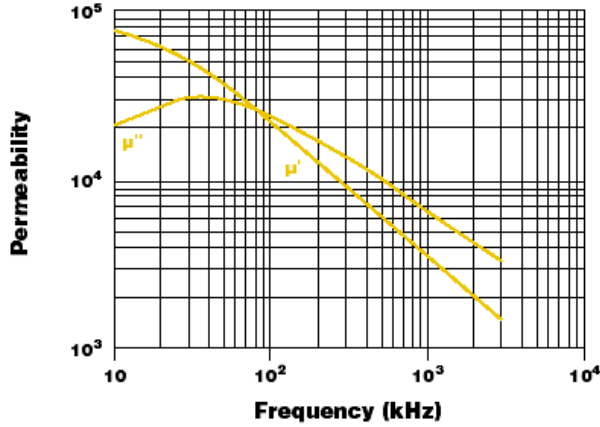
**Magnetic Properties Metglas<sup>®</sup> Magnaperm<sup>®</sup> Cores**

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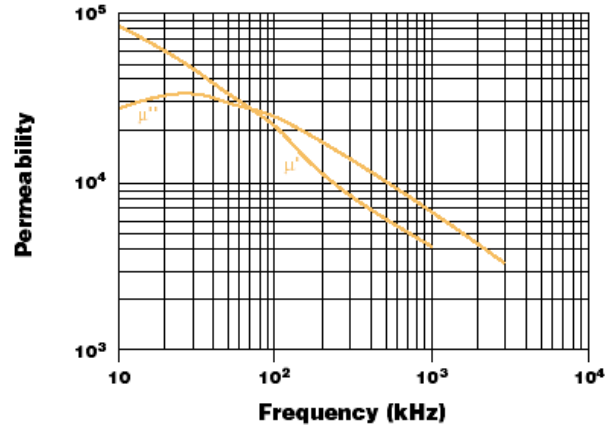
Ribbon Thickness ( $\mu\text{m}$ ) . . . . .18  
Density ( $\text{g}/\text{cm}^3$ ) . . . . .7.59  
Thermal Expansion ( $\text{ppm}/^\circ\text{C}$ ) . . . . .12.7  
Crystallization Temperature ( $^\circ\text{C}$ ) . . . . .560  
Curie Temperature ( $^\circ\text{C}$ ) . . . . .225  
Continuous Service Temperature ( $^\circ\text{C}$ ) . . . . . 90  
Tensile Strength ( $\text{MN}/\text{m}^2$ ) . . . . . .1k-1.7k  
Elastic Modulus ( $\text{GN}/\text{m}^2$ ) . . . . .100-110  
Vicker's Hardness (50g load) . . . . .960

Saturation Flux Density (Tesla) . . . . .0.57  
Permeability ( $\mu$  @ 1 kHz, 2.0 mA/cm) . . . . .>72,000  
Saturation Magnetostriction (ppm) . . . . .<<1  
Electrical Resistivity ( $\mu\text{-}\Omega\text{-cm}$ ) . . . . .142

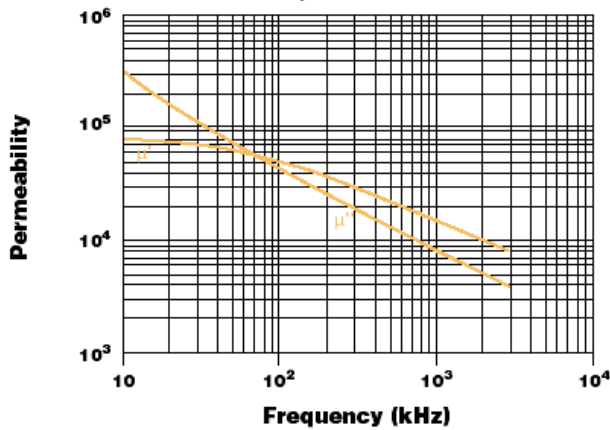
**Complex Series Permeability vs. Frequency  
@ 25°C, 1.6 mA/cm**



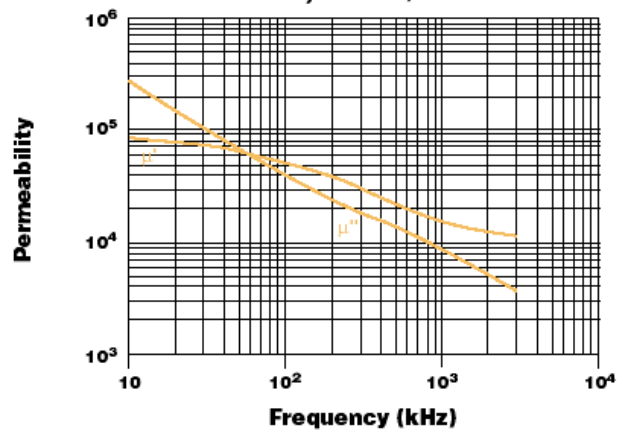
**Complex Series Permeability vs. Frequency  
@ 90°C, 1.6 mA/cm**



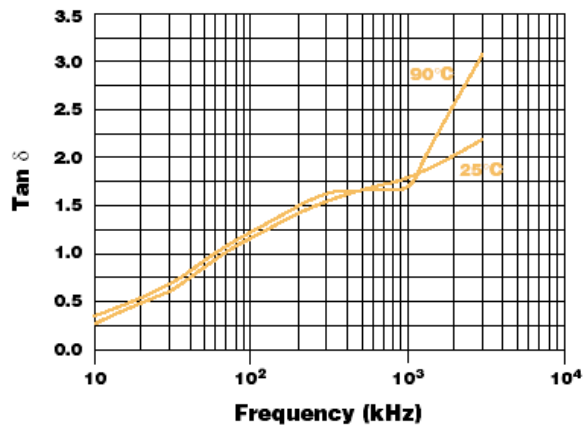
**Complex Parallel Permeability vs. Frequency  
@ 25°C, 1.6 mA/cm**



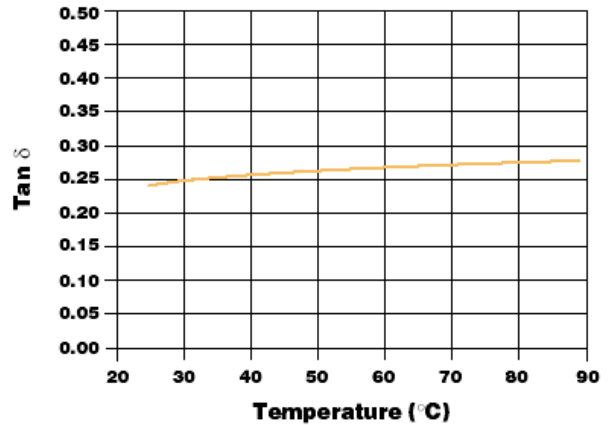
**Complex Parallel Permeability vs. Frequency  
@ 90°C, 1.6 mA/cm**



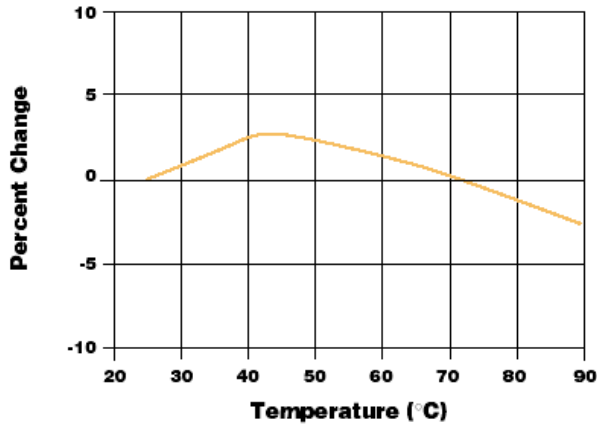
**Tan  $\delta$  vs. Frequency  
@ 1.6 mA/cm**



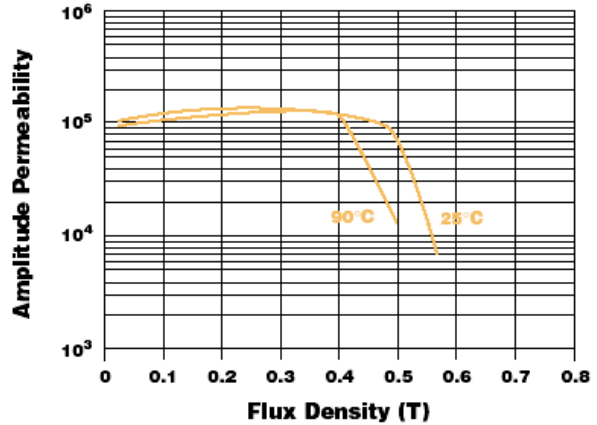
**Tan  $\delta$  vs. Temperature  
@ 10 kHz**



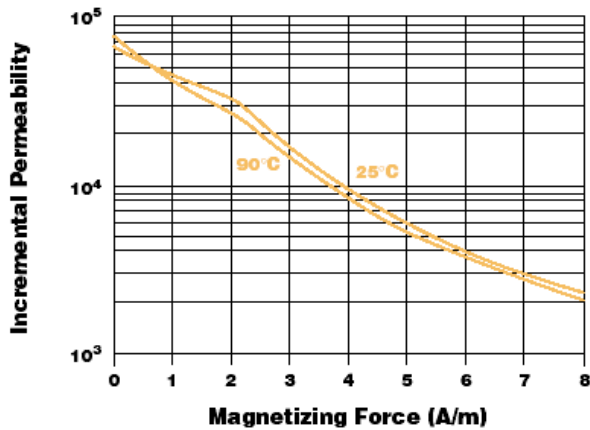
**Percent Change of Permeability vs. Temperature @ 10 kHz**



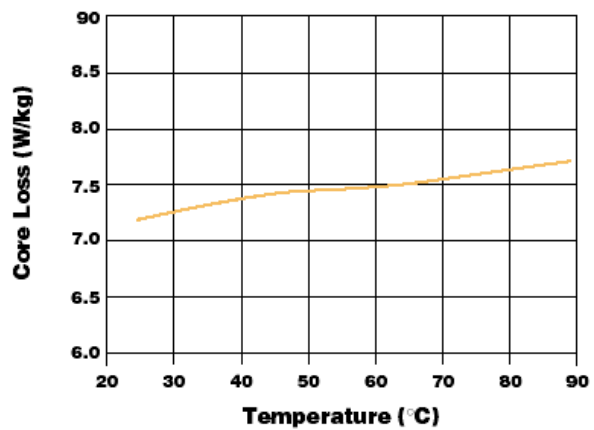
**Amplitude Permeability vs. Flux Density @ 10 kHz**



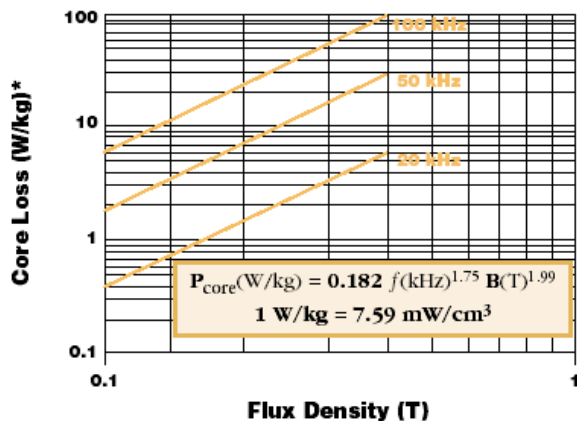
**Incremental Permeability vs. dc Bias @ 10 kHz**

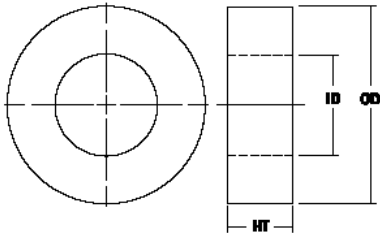


**Core Loss vs. Temperature @ 0.1 T/100 kHz**



**Core Loss vs. Flux Density† @ 25°C**





**Ordering Information**

Example:  
**MP1305X-4AF**

METGLAS Products      Flat Loop Core  
Outside Diameter (OD)      METGLAS Alloy 2714A  
Height (HT)

Case Material				
Box Type (X)	Material	UL File No.	Flam. Rating UL 94	Elec. Rel. Temp. Index (UL746B)
P	DuPont Zytel <sup>®</sup> 70G33L	E41938	HB	120
L	DuPont Zytel <sup>®</sup> FR50	E41938	V-O	120
V	DuPont Zytel <sup>®</sup> FR530L	E69578	V-O	120

MAGNAPERM BOXED CORE	BOXED CORE DIMENSIONS			CALCULATED SPECIFICATIONS				BARE CORE	MAGNETIC SPECIFICATIONS	
	Core Type (X)	OD (mm)	ID (mm)	Ht (mm)	Lm <sup>α</sup> (cm)	Ac <sup>β</sup> (cm <sup>2</sup> )	Wa <sup>γ</sup> (cm <sup>2</sup> )	WaAc <sup>x</sup> (cm <sup>4</sup> )	Mass (g)	AL VALUE AT 1kHz (microHenry)
	(max)	(min)	(max)	(nom)	(nom)	(nom)	(nom)	(nom)	(nom)	(min)
MP1305X4AF	14.70	7.60	7.00	3.46	0.06	0.49	0.03	1.59	14.9	
MP1405X4AF	16.10	7.60	7.00	3.67	0.08	0.49	0.04	2.46	20.4	
MP1506X4AF	17.40	7.50	8.60	3.86	0.14	0.48	0.07	4.36	32.8	
MP1805X4AF	21.10	10.50	7.10	4.88	0.11	0.92	0.10	4.25	20.1	
MP1906X4AF	21.50	10.70	8.60	4.99	0.16	0.95	0.15	6.48	29.3	
MP2008X4AF	22.50	10.70	10.70	5.15	0.25	0.95	0.24	9.91	43.5	
MP2410X4AF	28.10	17.00	11.80	6.83	0.21	2.35	0.48	10.97	27.3	
MP2510X4AF	28.10	17.00	11.80	7.01	0.25	2.35	0.58	13.55	32.1	
MP2705X4AF	29.80	14.50	7.00	6.89	0.21	1.72	0.36	11.02	27.1	
MP3210X4AF	35.30	19.60	11.80	8.58	0.39	3.11	1.21	25.70	40.9	

\* α = Mean magnetic path length, β = Net Cross-sectional area, γ = Core Window area and x = Area product.

\* All measurements are done at Room Temperature (22°C to 28°C)

\* Continuous Operating Temperature :90°C max. (Irrespective of type of box used).

BOX MATERIAL	BOX DESIGNATION (X)	MATERIAL DuPont	MANUFACTURER UL FILE #	MANUFACTURER FLAMMABILITY RATING
	P	ZYTEL 70G33L	E41938	HB
	L	ZYTEL FR50	E41938	94 V0
	V	RYNITE FR530L	E69578	94 V0

**Contact Information:**

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