

Glossary of Terms

μ_i Initial Permeability – The limited value of permeability of a ferromagnetic body at the origin of the curve of first magnetization.

μ_a Amplitude Permeability – The permeability at a stated value of field strength (or of the induction) with the field strength varying periodically with time and no static magnetic field being present.

μ_m Maximum Permeability – The maximum value of amplitude permeability.

μ_Δ Incremental Permeability – The permeability measured with an alternate magnetic field and in the presence of a static (DC) magnetic field.

μ_e Effective Permeability – For a component built up by different materials, the magnetic stray flux being negligible, the resulting permeability, defined as the permeability of a hypothetical homogeneous material with the same shape, dimensions and total reluctance.

A_L Inductance Factor – The self-inductance that a coil of specified shape and dimensions placed on the core in a given position would have if it consisted of one turn..

$$A_L = \frac{L}{N^2}$$

Core Loss – The power absorbed by a body of ferromagnetic material and dissipated as heat when that body is subjected to a time-varying magnetic field.

T.C. Temperature Coefficient – The change in inductance of a magnetic component with temperature expressed in PPM/C or %C

TC Curie Point – The critical temperature above which a ferromagnetic body is paramagnetic.

ρ Resistivity – The resistance measured by means of direct voltage of a body of ferromagnetic material with a constant cross sectional area, multiplied by that cross sectional area and divided by its length.

$\tan \delta$ Tangent Of The Loss Angle – The quotient of the magnitude of the imaginary part and the real part of the complex permeability expressed in series terms.

$$\tan d = \frac{ms''}{ms'} = \frac{1}{Q}$$

Q Quality Factor – The inverse of the tangent of the loss angle

$$Q = \frac{1}{\tan d}$$

$\frac{\tan d}{m}$ Loss Factor – The quotient of the tangent of the loss angle and the permeability

$$\frac{\tan d}{mi} = \frac{1}{miQ}$$

B_s Saturation Induction (Saturation Flux Density) – The maximum intrinsic induction possible in a material

B_R Residual Induction – The induction remaining in a magnetic material when the magnetizing force is reduced to zero.

H_c Coercive Force – The magnetizing field strength required to reduce the induction in a magnetic material to zero.

L_p Parallel Inductance – The pure self-inductance of an inductor in parallel with a pure resistance of such value that the combination has the equivalent electrical characteristics of the subject core and coil.

R_p Parallel Resistance – The pure resistance in parallel with a pure inductance of such value that the combination has the equivalent electrical characteristics of the subject core and coil.

X_p Parallel Reactance – The parallel inductance or capacitance of a core or coil multiplied by the angular frequency.

$$X_p = \omega L_p = 2\pi f L_p$$