

Magnetic Permeability Test

Introduction

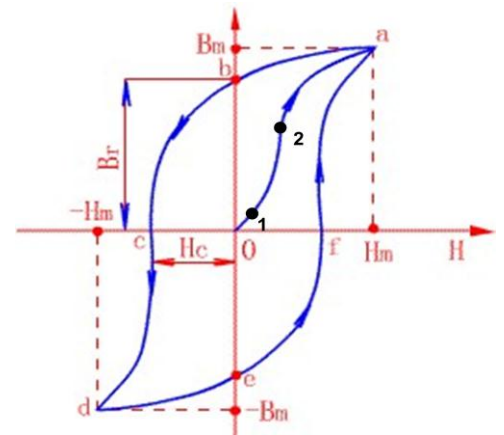
Magnetic permeability refers to the ability to break over magnetic field lines or resistance generating magnetic flux when applied current on coil in spaces.

Initial permeability

Refers to the permeability when $H \rightarrow 0$ in the basic magnetization curve.

Maximum permeability

The slope $\mu = B/H$ gradually increased as H increases and at a magnetic field intensity (H_m), the magnetic density reach maximum, namely maximum permeability.



Complex permeability

Complex permeability refers to the ratio between magnetic flux density and magnetic field strength in alternating magnetic field.

Test System

Initial permeability can be test by E4990A and E4991A impedance analyzer from 20 Hz to 3 GHz.

Device Name	Impedance analyzer	RF impedance analyzer
Equipment Type	E4990A	E4991A
Frequency Range	20 Hz to 120 MHz	1 MHz to 3 GHz
Basic Accuracy	$\pm 0.08\%$	$\pm 0.8\%$

In addition, we introduced an AC characteristics tester-SY 8218 hysteresis loop tester to test the rest of magnetic material parameters, including maximum permeability and complex permeability above.

Device name	Frequency range	Variable temperature test	Source /power
B-H analyzer	10 Hz to 10 MHz(sin)	-30~150°C	±5.2 A MAX, ±140 V MAX