Electric & Dielectrical Lab: Dielectric Strength (Breakdown Voltage)

Principle

Dielectric Strength, also known as Break Down Voltage, testing is used to measure the electrical strength of a material as an insulator. Dielectric strength is defined as the maximum voltage required to produce a dielectric breakdown through the material and is expressed as Volts per unit thickness. A higher dielectric strength represents a better quality of insulator.

Dielectric strength is calculated by dividing the breakdown voltage by the thickness of the sample. The data is expressed in Volts/mil. The location of the failure is also recorded.

Capabilities

AC and DC

- ASTM D149 (AC voltage)
- ASTM D3755 (DC voltage)
- 4" square sample or larger (thicker samples are tested in oil bath to avoid corona arcing)
- Testing temperatures (lab ambient)

Equipment

	Equipment Type	Information

	Hipotronics Model D149-DI	• Testing up to 100KV
		• Open air or oil bath electrodes
		• AC and DC voltage testing
		• Three methods
		  ◦ Short time
		  ◦ Slow rate-of-rise
		  ◦ Step-by-step

- Typical oil bath fixture
- Typical open air fixture