Test Methods for Fuses

Test methods for assessing the quality of fuse links in the critical tests are given below :

They are based on IEC60127.

Test Environment

Temperature : 15° C to 25° C. Free air protected from droughts and direct heat radiation

Fuse Holders for Testing

Fuse holders which have contact resistance less than 10mΩ between fuse holder termination and fuse end cap should be used.

DC Power Supply

DC power supply used for testing should have a current stability of ±1% of the adjusted value of current.

Voltage Drop

- Use DC power supply
- Pass the rated current for a duration sufficient to reach temperature stability
- Measure the voltage drop directly across the fuse caps.

Time Current Characteristics

- Use DC Power supply. The supply voltage should not exceed the rated voltage of the fuse. A source of sufficiently high voltage power supply giving constant current should be used to ensure current stability during test. Due to increase in the voltage drop when the fuse element approaches melting point, care should be taken to ensure that there is sufficient circuit voltage available to drive the current through the fuse. It is preferable to use a constant current DC power supply.
- The accuracy of time measurement should be within a tolerance of ±5% for time less than 10 sec and ±2% for time 10 sec or more.
- Pass the specified current through the fuse under test and measure the pre arcing(melting time) of the fuse. Practically, the fuse operating time is measured.

Compare the measured time with the fuse specification.

Breaking Capacity (Interrupting Rating)

Use AC supply at rated voltage

- Connect a suitable resistor, ammeter and the fuse under test in series with the power supply.
- Calibrate for the required current through fuse by short circuiting the fuse. After calibration remove the short circuit.
- Close the circuit.
- The fuse link should operate satisfactorily without any of the following phenomena :
  - Permanent arcing or ignition.
  - Bursting of the fuse links.
  - Fusing of the contacts.
  - Illegibility of marking after test
  - Piercing of the external surfaces of the end caps, visible to the naked eye.
- The following phenomena are neglected.
  - Changes in colour.
  - Black spots on the end caps.
  - Small deformation of the end caps.
  - Cracking of the fuse links.