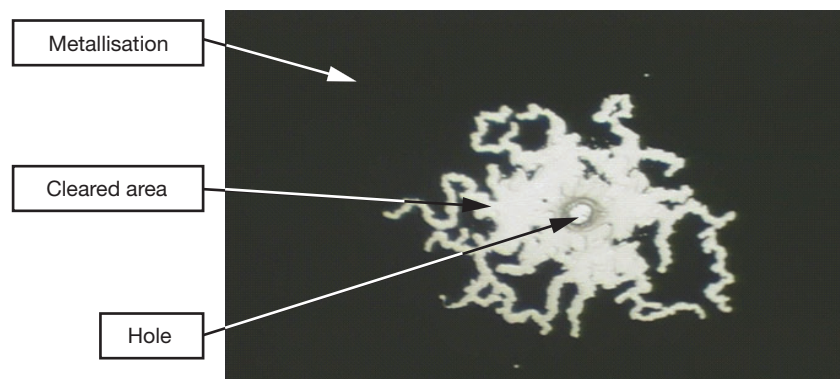


## Voltage Proof Test for Metalized Film Capacitors

Voltage proof tests, also called “high pot” tests, are used to check if a capacitor has a breakdown failure mode occurring at a certain test voltage. The detection of breakdown is done by a current detection, specified if exceeding a certain limit (cut off current).

For all capacitor technologies that don't have the ability to recover after a partial breakdown, the current flow is continuous.

However metalized film capacitors have the property to recover after an instantaneous breakdown (partial breakdown) due to the fact that the metalized electrodes (capacitor plates) act as a fuse. For fusing a small current is needed, but is not continuous. This effect is defined as “self healing” and not as breakdown.



### Self healing of a metalized electrode in a film capacitor

Therefore in testing these capacitors on a proof voltage, it is always possible that the capacitors have the self healing effect, taking temporarily a peak current, but are completely isolated again after this phenomenon is stopped. To take this in account for qualifying capacitors, in all IEC standards of metalized film capacitors a breakdown is defined only when it is “permanent”. Therefore a note is added for explanation.

**Requirement:**

There shall be no permanent breakdown or flashover during the test.

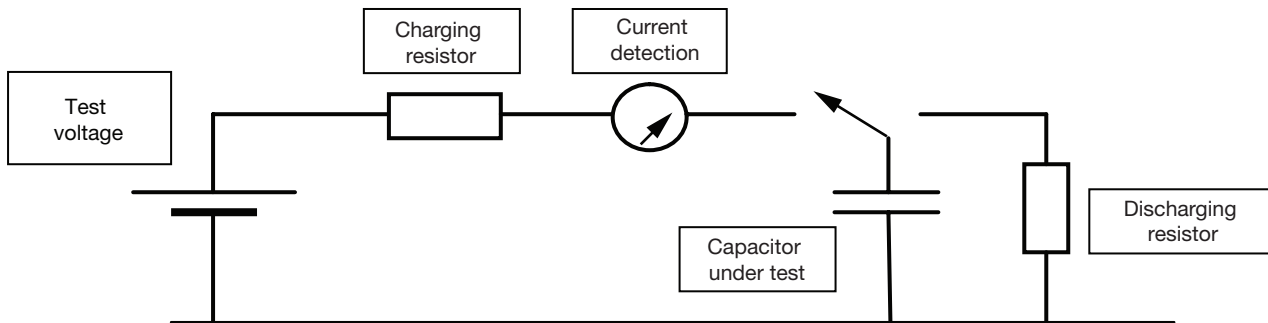
**Note**

- The occurrence of self-healing breakdowns during the application of the test voltages is allowed.

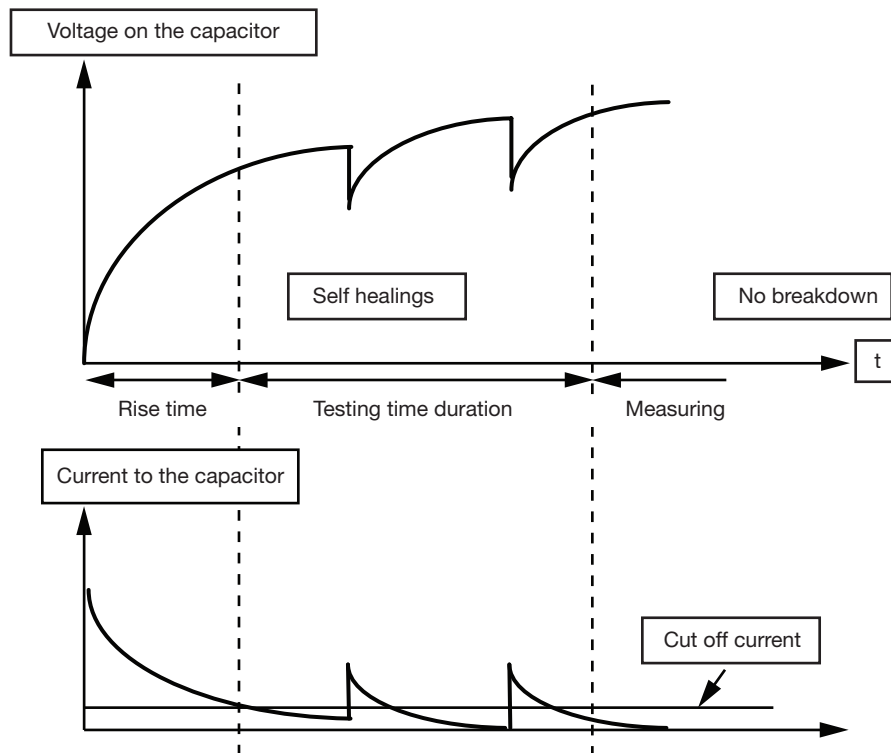
To detect if the behavior is a self healing or permanent breakdown, it is recommended to measure the remaining charging current only after one minute of charging and to neglect the small current peaks (arcing) before that time. Modern “high pot” test equipments have the function to allow arcing currents before the final permanent breakdown current.

## Voltage Proof Test for Metalized Film Capacitors

### TYPICAL TEST CIRCUIT



### TYPICAL VOLTAGE AND CURRENT GRAPH FOR A SELF HEALING CAPACITOR



## Voltage Proof Test for Metalized Film Capacitors

### TYPICAL VOLTAGE AND CURRENT GRAPH FOR A CAPACITOR WITH CONTINUOUS BREAKDOWN

