

इंटरनेट

मानक

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“जानने का अधिकार, जीने का अधिकार”

Mazdoor Kisan Shakti Sangathan

“The Right to Information, The Right to Live”

“पुराने को छोड़ नये के तरफ”

Jawaharlal Nehru

“Step Out From the Old to the New”

IS 10810-44 (1984): Methods of test for cables, Part 44:
Spark test [ETD 9: Power Cables]



“ज्ञान से एक नये भारत का निर्माण”

Satyanarayan Gangaram Pitroda

“Invent a New India Using Knowledge”



“ज्ञान एक ऐसा खजाना है जो कभी चुराया नहीं जा सकता है”

Bhartrhari—Nitiśatakam

“Knowledge is such a treasure which cannot be stolen”

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Indian Standard

METHODS OF TEST FOR CABLES

PART 44 SPARK TEST

1. Scope — Covers the method for ac spark testing of insulation and non-metallic sheath of electric cables.

2. Significance — It is used for evaluation of insulating and sheathing materials for specific end uses and as a means for detecting defects in the manufacturing processes.

3. Terminology — See IS : 1885 (Part 32)-1971 ‘ Electrotechnical vocabulary : Part 32 Cables, conductors and accessories for electricity supply ’.

4. Apparatus — A suitable spark tester having the requirements as given in Appendix A.

5. Material — No material other than the specimen is required.

6. Test Specimen — The drum length of the cable or insulated conductor core shall constitute the test specimen.

7. Conditioning — No conditioning is required for this test.

8. Procedure

8.1 The conductor of the core or the conductor, metallic sheath screen or the armour is continuously earthed and the insulated conductor or cable is inserted into the electrode of the spark tester. This end is then pulled and fixed to a winding drum.

8.2 The required voltage as specified in the relevant cable specification is maintained between the test electrode and the conductor of the core or cable under test.

8.3 The cable or the insulated conductor is wound through the electrode of the spark tester and the faults, if any, are recorded.

9. Tabulation of Observations

Sample No.	Description of Sample	Length of Sample m	Thickness of Non-Metallic Sheath, if any mm	Spark Test Voltage kV	No. of Faults
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10. Calculation — No calculation is involved.

Adopted 14 March 1984

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11. Report**11.1 Reference Specification** _____

Sample No.	Description of Sample	Spark Test Voltage	Faults, if any
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11.2 Conclusion — The specimen meets/does not meet the requirements of the specification.

APPENDIX A

(Clause 4)

SPARK TEST EQUIPMENT**A-1. Spark Tester**

A-1.1 High Voltage Source — It shall supply alternating current at a nominal frequency of 50 Hz.

The electrode to earth potential difference shall be displayed on a meter either by connection direct to the output terminals of the high voltage source or by any suitable arrangement giving an accuracy of ± 5 percent.

Proper earthing shall be ensured during the test.

A-1.2 Electrode — The length of the electrode shall be such that every point of the core or non-metallic covering under test is in the electrode for not less than 0.05 s. (This represents a maximum throughput speed of 1.2 m/min/mm of electrode.)

The design of the electrode shall be such that the test specimen makes intimate contact throughout the electrode during its passage through the electrode.

A-1.3 Fault Indicator — It shall be arranged to operate a digital display counter such that one count per discrete fault is registered. The counter shall maintain indication until either the next succeeding fault is registered or until the indication is manually cancelled.

A-2. Sensitivity — The sensitivity requirements of the spark testing apparatus shall be such that the detector shall operate when an artificial fault device as described below is connected between the electrode and earth.

The electrode voltage shall be set initially at 3 kV (rms) and when the artificial fault device is connected to the electrode, with the spark gap temporarily short-circuited, the steady state current shall not exceed $600\mu\text{A}$. In order to limit the current to a suitable value an impedance may be added in series with the artificial device.

For the given electrode voltage of 3 kV (rms) the spark gap shall consist of a metal plate and a needle point, and the distance between them shall be maintained at 0.25 ± 0.05 mm for a period of 0.025 s, once per second.

The sensitivity shall be deemed satisfactory if, after a minimum of 20 successive breakdowns of the spark gap, the fault Indicator has registered at the rate of — neither more nor less than one count per spark. Each test shall be carried out using a new needle and each needle shall be discarded after a maximum of 60 repetitive sparks.

A-3. Precautions

A-3.1 Access to Electrode System — To avoid the risk of shock to the operator when access is desired to the electrode system, it is advisable to check regularly that the automatic switch-off mechanism on the shielded enclosure for the electrodes are functioning correctly.

A-3.2 Conductor Earthing — Unless the conductor, metallic sheath, screen or armour underlying the non-metallic covering under test is effectively and continuously earthed, faults may not be located. Continuous earthing or other suitable means should be provided for the prevention of electrical shock.

A-3.3 Leakage Currents — Precautions are necessary to ensure the satisfactory operation of spark testing equipment by restricting leakage currents to a minimum level, for example, by removing surface moisture from the core or cable under test.