SLOVENSKI STANDARD
SIST HD 380 S2:1998

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Test methods for evaluating resistance to tracking and erosion of electrical insulating materials used under severe ambient conditions (IEC 60587:1984)

Test methods for evaluating resistance to tracking and erosion of electrical insulating materials used under severe ambient conditions

Prüfverfahren zum Beurteilen der Festigkeit gegen Kriechwegbildung und Erosion elektrisch isolierender Werkstoffe, die unter erschwerten Umweltbedingungen ein gesetzt werden

Méthodes d'essai pour évaluer la résistance au cheminement et à l'érosion des matériaux isolants électriques utilisés dans des conditions ambiantes sévères

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CENELEC

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TEST METHODS FOR EVALUATING RESISTANCE TO TRACKING AND EROSION OF ELECTRICAL INSULATING MATERIALS USED UNDER SEVERE AMBIENT CONDITIONS

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BODY OF THE HD

The Harmonization Document consists of:

- IEC 587 (1984) ed 2; IEC/SC 15A, not appended

This Harmonization Document was approved by CENELEC on 1986-12-09.

The English and French versions of this Harmonization Document are provided by the text of the IEC publication and the German version is the official translation of the IEC text. The German translation is available.

According to the CENELEC Internal Regulations the CENELEC member National Committees are bound:

to announce the existence of this Harmonization Document at national level by or before 1987-06-01

to publish their new harmonized national standard by or before 1987-12-01

to withdraw all conflicting national standards by or before 1987-12-01.

Harmonized national standards are listed on the HD information sheet, which is available from the CENELEC National Committees or from the CENELEC Central Secretariat.

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NORME DE LA CEI

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Test methods for evaluating resistance to tracking and erosion of electrical insulating materials used under severe ambient conditions

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

TEST METHODS FOR EVALUATING RESISTANCE TO TRACKING AND EROSION OF ELECTRICAL INSULATING MATERIALS USED UNDER SEVERE AMBIENT CONDITIONS

FOREWORD

1) The formal decisions or agreements of the IEC on technical matters, prepared by Technical Committees on which all the National Committees having a special interest therein are represented, express, as nearly as possible, an international consensus of opinion on the subjects dealt with.

2) They have the form of recommendations for international use and they are accepted by the National Committees in that sense.

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PREFACE

This standard has been prepared by Sub-Committee 15A: Short-time Tests, of IEC Technical Committee No. 15: Insulating Materials.

This second edition replaces the first edition of IEC Publication 587.

The text of this standard is based on the following documents:

Six Months' Rule	Report on Voting
15A(CO)44	15A(CO)46

Further information can be found in the Report on Voting, indicated in the table above.

TEST METHODS FOR EVALUATING RESISTANCE TO TRACKING AND EROSION OF ELECTRICAL INSULATING MATERIALS USED UNDER SEVERE AMBIENT CONDITIONS

1. Scope and object

This standard describes two test methods for the evaluation of electrical insulating materials for use under severe ambient conditions at power frequencies (48 Hz to 62 Hz) by measurement of the resistance to tracking and erosion, using a liquid contaminant and inclined plane specimens.

Method 1: constant tracking voltage;
Method 2: stepwise tracking voltage.

Note. — The test conditions are designed to accelerate the production of the effects, but do not reproduce all the conditions encountered in service.

With the test apparatus described in the following sub-clauses, the track starts at the lower electrode. Two criteria for determining the end point of the test are in use:

Criterion A:

The end point is reached when the value of the current in the high voltage circuit through the specimen exceeds 60 mA. An overcurrent device then breaks this circuit.

Note. — This end point criterion permits the use of an automatic apparatus testing several specimens simultaneously.

Criterion B:

The end point is reached when the track reaches a mark on the specimen surface 25 mm from the lower electrode (see Figures 1 and 3*b*, pages 16 and 18).

Notes 1. — This end point criterion requires visual supervision and manual control.
2. — Criterion A is the preferred criterion. Criterion B may be used if required by the relevant material specification.

2. Definitions

2.1 *Track*

A partially conducting path created by localized deterioration on the surface of an insulating material.

2.2 *Tracking*

The process that produces tracks as a result of the action of electric discharges on or close to a contaminated surface of an insulating material.

2.3 *Erosion, electrical*

The wearing away of electrical insulating material by the action of electrical discharges.

2.4 *Time-to-track*

The time required to produce tracks under the specified conditions of test.

3. Test specimens

3.1 *Dimensions*

Flat inclined specimens shall be at least 50 mm × 120 mm. The preferred thickness shall be 6 mm. Other thicknesses may be used, but must be mentioned in the test report. The specimens shall be drilled as shown in Figure 1, page 16, to take the electrodes.

3.2 *Preparation*

Unless otherwise specified, the surface of the specimens shall be lightly abraded. The abrasion should be done with a fine silicon carbide abrasive paper under de-ionized or distilled water until the whole surface wets and appears uniformly matt when dry. If abrasion has not been used, the method of cleaning shall be mentioned in the test report.

Specimens used for criterion B (see Clause 1) shall have reference marks on both edges 25 mm above the lower electrode (see Figures 1 and 3*b*, page 18).

4. Apparatus

4.1 *Electrical apparatus*

A schematic circuit is given in Figure 2*a*, page 17. As the test will be carried out at high voltages, it is obviously necessary to use an earthed safety enclosure. The circuit comprises:

4.1.1 A 48 Hz to 62 Hz power supply with an output voltage stabilized to ± 5% which can be varied up to about 6 kV with a rated current not less than 0.1 A for each specimen. Preferred test voltages are 2.5 kV, 3.5 kV and 4.5 kV, for method 1.

Note. — If only one power supply is used for several specimens, each should have a circuit-breaker or similar device (see Sub-clause 4.1.4).

4.1.2 A 200 W resistor with ± 10% tolerance in series with each specimen on the high-voltage side of the power supply. The resistance of the resistor shall be taken from Table I.

TABLE I

Test voltage (kV)	Preferred test voltage for method 1 (kV)	Contaminant flow rate (ml/min)	Series resistor, resistance (kΩ)
1.0 to 1.75	—	0.075	1
2.0 to 2.75	2.5	0.15	10
3.0 to 3.75	3.5	0.30	22
4.0 to 4.75	4.5	0.60	33
5.0 to 6.0	—	0.90	33