

INTERNATIONAL STANDARD

NORME INTERNATIONALE

Electrostatics –

Part 4-10: Standard test methods for specific applications – Two-point resistance measurement

Électrostatique –

Partie 4-10: Méthodes d'essai normalisées pour des applications spécifiques – Mesure de la résistance en deux points



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IEC Central Office
3, rue de Varembe
CH-1211 Geneva 20
Switzerland

Tel.: +41 22 919 02 11
Fax: +41 22 919 03 00
info@iec.ch
www.iec.ch

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

ELECTROSTATICS –

**Part 4-10: Standard test methods for specific applications –
Two-point resistance measurement**

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International Standard IEC 61340-4-10 has been prepared by IEC technical committee 101: Electrostatics.

The text of this standard is based on ANSI/ESD STM11.13-2004. It was submitted to the National Committees for voting under the Fast Track Procedure.

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

FDIS	Report on voting
101/368/FDIS	101/377/RVD

Full information on the voting for the approval of this standard can be found in the report on voting indicated in the above table.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

The committee has decided that the contents of this publication will remain unchanged until the stability date indicated on the IEC web site under "<http://webstore.iec.ch>" in the data related to the specific publication. At this date, the publication will be

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- replaced by a revised edition, or
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ELECTROSTATICS –

Part 4-10: Standard test methods for specific applications – Two-point resistance measurement

1 Scope

This part of IEC 61340 provides a test method to measure the resistance between two points on an item's surface.

It is intended for measuring the resistance of items in the range of $10^4 \leq R < 10^{12} \Omega$.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ASTM D257-07, *Standard Test Methods for DC Resistance or Conductance of Insulating Materials*

ASTM D2240, *Standard Test Method for Rubber Property – Durometer Hardness*

3 General discussion

This method is recommended for testing items with irregularly shaped surfaces. Conventional concentric ring and parallel bar electrode configurations are used for testing planar items only. However, most packaging items are not planar. Examples include shipping tubes, trays, tote boxes and carrier tapes. This probe employs springs to apply consistent contact pressure between the electrode and the item. Force created by springs is subject to variance from wear, contamination and manufacturing tolerance. This variance is acceptable for this application. Elastomeric electrodes compensate for uneven item surfaces. These features yield consistent results between laboratories and test operators.

4 Equipment

4.1 Probe

Refer to Figure 1 and Table 1.

This two-point probe consists of an insulated metal body with a polytetrafluoroethylene (PTFE) insulator inserted into each end. One insulator holds test leads; the other holds receptacles that accept spring-loaded pins. One receptacle is surrounded by a cylindrical insulator, which is surrounded by a metal shield. The pins are gold plated and have a spring force of $4,56 \text{ N} \pm 10 \%$ at a travel of 4,32 mm (0,170 in). The pin tips are machined to accept friction fitted 3,18 mm (0,125 in) diameter electrically conductive rubber electrodes. The rubber has a Shore A (IRHD) durometer hardness of 50-70 (ASTM D2240). The electrodes are 3,18 mm (0,125 in) long. Electrode volume resistivity is $< 500 \Omega \text{ cm}$.