IEC 61340-4-8

Edition 2.0 2014-11

INTERNATIONAL STANDARD

NORME INTERNATIONALE

Electrostatics –
Part 4-8: Standard test methods for specific applications – Electrostatic discharge shielding – Bags

Électrostatique –
Partie 4-8: Méthodes d'essai normalisées pour des applications spécifiques – Blindage contre les décharges électrostatiques – Sacs

IEC 61340-4-8:2014-11(en-fr)

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

ELECTROSTATICS –

Part 4-8: Standard test methods for specific applications – Electrostatic discharge shielding – Bags

FOREWORD

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International Standard IEC 61340-4-8 has been prepared by IEC technical committee 101: Electrostatics.

This second edition cancels and replaces the first edition published in 2010 and constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

a) modification to the title to include the word "Electrostatic" before discharge shielding";
b) removal of normative references ANSI/ESD STM5.1 and ASTM D-257-78 and replaced by normative references IEC 61340-3-1 and IEC 60093;
c) new normative reference to IEC 61340-5-3 added, because the requirement for shielding bags have been included in this standard;
d) imperial units have been removed.

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

FDIS	Report on voting
101/448/FDIS	101/456A/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.

A list of all parts in the IEC 61340 series, under the general title *Electrostatics*, can be found on the IEC website.

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

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
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INTRODUCTION

It is the intention of this part of IEC 61340 to provide industry with a common, repeatable method for testing and determining the electrostatic discharge shielding ability of electrostatic discharge shielding bags.

This test method describes the use of a single current probe in order to obtain the energy value inside a bag when tested with a 1 000 V human body model discharge pulse in an ESD simulator.

The standard addresses important variables such as:

– discharge waveform characteristics;
– capacitive probe capacitance;
– bag size.

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ELECTROSTATICS –

Part 4-8: Standard test methods for specific applications – Electrostatic discharge shielding – Bags

1 Scope

This part of IEC 61340 provides a test method for evaluating the performance of electrostatic discharge shielding bags tested according to the requirements of IEC 61340-5-3. The design voltage for the test apparatus is 1 000 V d.c.

The test method presented in this standard can also be applied to packaging other than shielding bags.

The purpose of this standard is to ensure that testing laboratories who use this test method to evaluate a given packaging material will obtain similar results.

This standard does not address protection from electromagnetic interference (EMI), radio frequency interference (RFI), electromagnetic pulsing (EMP) nor protection against volatile materials.

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.

IEC 60093, *Methods of test for volume resistivity and surface resistivity of solid electrical insulating materials*[1]

IEC 61340-3-1, *Electrostatics – Part 3-1: Methods for simulation of electrostatic effects – Human body model (HBM) electrostatic discharge test waveforms*

IEC 61340-5-3, *Electrostatics – Part 5-3: Protection of electronic devices from electrostatic phenomena – Properties and requirements classification for packaging intended for electrostatic discharge sensitive devices*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1
electrostatic discharge shield
barrier or enclosure that limits the passage of current and attenuates an electromagnetic field resulting from an electrostatic discharge

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[1] Replacements for IEC 60093 are currently under consideration and have been assigned project numbers in the IEC 62631-3 series. The relevant project is IEC 62631-3-2, *Dielectric and resistive properties of solid insulating materials – Part 3-2: Determination of resistive properties (DC methods) – Surface resistance and surface resistivity*.

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4 Required equipment

4.1 ESD simulator

A basic ESD simulator is shown in Figure 1. This simulator and the resulting waveforms are taken from IEC 61340-3-1. The equivalent circuit for the simulator consists of a 100 pF capacitor in series with a 1 500 Ω resistor.

4.2 Waveform verification equipment

4.2.1 General

Equipment capable of verifying the pulse waveforms defined in this part of IEC 61340 shall include, but is not limited to, a storage oscilloscope, a suitable current probe and a high voltage resistor.

4.2.2 Oscilloscope

A digital storage oscilloscope capable of a minimum 200 MHz single shot bandwidth and a minimum sampling rate of 500 mega samples per second.

4.2.3 Current probe

The current probe shall have a minimum frequency response of 200 MHz. Included in the current probes that meet this requirement are for example a Tektronix CT-1, CT-2 and CT-6 [2]. The maximum cable length shall be 1 m.

4.2.4 High voltage resistor

The resistor shall be a 500 Ω, ±1 % tolerance, voltage rating at least 2 000 V, low inductance, sputtered metal film type.

4.3 Capacitive probe

A parallel plate capacitive probe shall be constructed as shown in Figure 2. The capacitance of the probe shall be 8 pF ±2 pF. The probe capacitance can be verified according to Clause 6, point c).

The spacer between the plates shall be made of an insulating material such as polycarbonate or acrylic.

4.4 Discharge electrode and ground electrode

The discharge electrode and the ground electrode shall be 3,8 cm ± 0,025 cm in diameter and shall be made of a conductive material. The support area that surrounds the ground electrode shall be 22 cm ± 1,0 cm × 27 cm ± 1,0 cm and have a surface resistance greater than 1×10^{12} Ω as measured by IEC 60093.

4.5 Bag size

The bags used for this test shall be 20 cm ±0,5 cm × 25 cm ±0,5 cm with 20 cm being the open end. The defined bag size relates to the inner dimension of a bag.

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[2] The information concerning Tektronix CT-1, CT-2 and CT-6 is given for the convenience of users of this standard and does not constitute an endorsement by IEC of the product named. Equivalent products may be used if they can be shown to lead to the same results.

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