

# INTERNATIONAL STANDARD

**COMMENTED VERSION**

**Electrostatics -  
Part 4-7: Standard test methods for specific applications - Ionization**

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## CONTENTS

FOREWORD .....	3
INTRODUCTION .....	5
1 Scope .....	6
2 Normative references .....	6
3 Terms and definitions .....	6
4 Test fixture and instrumentation .....	8
5 Specific requirements for equipment categories .....	10
5.1 Specific requirements for all ionization equipment .....	10
5.2 Room ionization .....	11
5.3 Laminar flow hood ionization .....	14
5.4 Worksurface ionization .....	16
5.5 Compressed gas ionizers – Guns and nozzles .....	18
Annex A (informative) Theoretical background and additional information on the standard test method for the performance of ionizers .....	20
A.1 Introductory remarks .....	20
A.2 Air ions .....	20
A.3 Mobility and ion current .....	20
A.4 Neutralization current .....	21
A.5 Neutralization rate .....	21
A.6 Ion depletion and field suppression .....	21
A.7 Charged plate monitor and charge neutralization .....	22
A.8 Relationship between charged plate monitor decay time and actual object .....	22
A.9 Offset voltage .....	22
A.10 Preparation of test area .....	23
A.11 Ion transport in airflow .....	23
A.12 Obstruction of airflow around the charged plate monitor .....	23
A.13 Effect of "air blanket" .....	24
A.14 Sources of measurement error .....	24
A.14.1 Typical decay time variability .....	24
A.14.2 Plate isolation .....	24
A.14.3 Charging voltage .....	24
A.14.4 Materials near the plate .....	24
A.14.5 Other field-producing devices in test area .....	24
A.14.6 Effect of offset voltage on decay time .....	25
A.15 Importance of ionization equipment maintenance .....	25
Annex B (normative) Method of measuring the capacitance of an isolated conductive plate .....	26
B.1 Method .....	26
B.2 Equipment .....	26
B.3 Procedure .....	26
B.4 Example .....	27
B.5 Sources of error .....	27
B.5.1 Measuring equipment .....	27
B.5.2 Poor plate isolation .....	28
B.5.3 Objects in the environment .....	28
B.5.4 Stray capacitance .....	29
Annex C (informative) Safety considerations .....	30

C.1	General.....	30
C.2	Electrical.....	30
C.3	Ozone.....	30
C.4	Radioactive.....	30
C.5	X-ray.....	30
C.6	Installation .....	30
	Bibliography.....	31
	List of comments.....	32
	Figure 1 – Charged plate monitor components for non-contacting plate measurement .....	9
	Figure 2 – Charged plate monitor components for contacting plate measurement .....	9
	Figure 3 – Conductive plate detail of the non-contacting CPM.....	10
	Figure 4 – Conductive plate detail of the voltage follower CPM .....	10
	Figure 5 – Test locations for room ionization – AC bars, grids and DC bar systems .....	12
	Figure 6 – Test locations for room ionization – Single polarity emitter systems .....	13
	Figure 7 – Test locations for room ionization – Two DC-line systems .....	13
	Figure 8 – Test locations for room ionization – Pulsed DC emitter systems .....	13
	Figure 9 – Test locations for vertical laminar flow hood – Top view .....	14
	Figure 10 – Test locations for vertical laminar flow hood – Side view .....	15
	Figure 11 – Test locations for horizontal laminar flow hood – Top view .....	15
	Figure 12 – Test locations for horizontal laminar flow hood – Side view .....	16
	Figure 13 – Test locations for benchtop ionizer – Top view.....	17
	Figure 14 – Test locations for benchtop ionizer – Side view .....	17
	Figure 15 – Test locations for overhead ionizer – Top view .....	18
	Figure 16 – Test locations for overhead ionizer – Side view.....	18
	Figure 17 – Test locations for compressed gas ionizer (gun or nozzle) – Side view.....	19
	Table 1 – Test set-ups and test locations and points (TP).....	11
	Table B.1 – Example measurement data .....	27

## INTERNATIONAL ELECTROTECHNICAL COMMISSION

## Electrostatics - Part 4-7: Standard test methods for specific applications - Ionization

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This commented version (CMV) of the official standard IEC 61340-4-7:2025 edition 3.0 allows the user to identify the changes made to the previous IEC 61340-4-7:2017 edition 2.0. Furthermore, comments from IEC TC 101 experts are provided to explain the reasons of the most relevant changes, or to clarify any part of the content.

A vertical bar appears in the margin wherever a change has been made. Additions are in green text, deletions are in strikethrough red text. Experts' comments are identified by a blue-background number. Mouse over a number to display a pop-up note with the comment.

This publication contains the CMV and the official standard. The full list of comments is available at the end of the CMV.

IEC 61340-4-7 has been prepared by IEC technical committee 101: Electrostatics. It is an International Standard.

This third edition cancels and replaces the second edition published in 2017. This edition constitutes a technical revision.

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

- a) in Figure 5, a NOTE 3 was added to clarify that for AC bars and grids, a single emitter alternating between +/– polarity is used;
- b) in Annex B, the relative error for measurement equipment was updated to include the consideration for the resolution of the voltmeter.

The text of this International Standard is based on the following documents:

Draft	Report on voting
101/739/FDIS	101/744/RVD

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

The language used for the development of this International Standard is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at [www.iec.ch/members\\_experts/refdocs](http://www.iec.ch/members_experts/refdocs). The main document types developed by IEC are described in greater detail at [www.iec.ch/publications](http://www.iec.ch/publications).

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

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- reconfirmed,
- withdrawn, or
- revised.

## INTRODUCTION

Grounding is the primary method used to limit static charge when protecting electrostatic discharge sensitive items in the work environment. However, grounding methods are not effective in removing static charges from the surfaces of non-conductive (insulative) or isolated (ungrounded) **1** conductive materials. Air ionization techniques, by means of ionizer systems, can be utilized to reduce this charge.

The preferred way of evaluating the ability of an ionizer to neutralize a static charge is to directly measure the rate of charge decay. Charges to be neutralized ~~may~~ can be located on insulators as well as on isolated conductors. It is difficult to charge an insulator reliably and repeatably. Charge neutralization is more easily evaluated by measuring the rate of decay of the voltage of an isolated conductive plate. The measurement of this decay should not interfere with or change the nature of the actual decay. Four practical methods of air ionization are addressed in this document:

- a) radioactive emission;
- b) high-voltage corona from AC electric fields;
- c) high-voltage corona from DC electric fields;
- d) soft X-ray emission.

This part of IEC 61340 provides test methods and procedures that can be used when evaluating ionization equipment. The objective of the test methods is to generate meaningful, reproducible data. The test methods are not meant to be a recommendation for any particular ionizer configuration. The wide variety of ionizers, and the environments within which they are used, will often require test methods different from those described in this document. Users of this document should be prepared to adapt the test methods as required to produce meaningful data in their own application of ionizers.

Similarly, the test conditions chosen in this document do not represent a recommendation for acceptable ionizer performance. There is a wide range of item sensitivities to static charge. There is also a wide range of environmental conditions affecting the operation of ionizers. Performance specifications should be agreed upon between the user and manufacturer of the ionizer in each application. Users of this document should be prepared to establish reasonable performance requirements for their own application of ionizers.

Annex B provides a method for measuring capacitance of the isolated conductive plate.