



NSAI
Standards

Irish Standard
I.S. EN ISO 14644-3:2019

Cleanrooms and associated controlled environments - Part 3: Test methods (ISO 14644-3:2019)

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I.S. EN ISO 14644-3:2019

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This document is based on:

EN ISO 14644-3:2019

Published:

2019-10-16

This document was published under the authority of the NSAI and comes into effect on:

2019-11-03

ICS number:

13.040.35

NOTE: If blank see CEN/CENELEC cover page

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National Foreword

I.S. EN ISO 14644-3:2019 is the adopted Irish version of the European Document EN ISO 14644-3:2019, Cleanrooms and associated controlled environments - Part 3: Test methods (ISO 14644-3:2019)

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EUROPEAN STANDARD

EN ISO 14644-3

NORME EUROPÉENNE

EUROPÄISCHE NORM

October 2019

ICS 13.040.35

Supersedes EN ISO 14644-3:2005

English Version

Cleanrooms and associated controlled environments - Part 3: Test methods (ISO 14644-3:2019)

Salles propres et environnements maîtrisés apparentés
- Partie 3: Méthodes d'essai (ISO 14644-3:2019)

Reinräume und zugehörige Reinraumbereiche - Teil 3:
Prüfverfahren (ISO 14644-3:2019)

This European Standard was approved by CEN on 24 July 2019.

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Contents

Page

European foreword..... 3

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European foreword

This document (EN ISO 14644-3:2019) has been prepared by Technical Committee ISO/TC 209 "Cleanrooms and associated controlled environments" in collaboration with Technical Committee CEN/TC 243 "Cleanroom technology" the secretariat of which is held by BSI.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by April 2020, and conflicting national standards shall be withdrawn at the latest by April 2020.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

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Cleanrooms and associated controlled environments —

**Part 3:
Test methods**

Salles propres et environnements maîtrisés apparentés —

Partie 3: Méthodes d'essai



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Published in Switzerland

Contents

	Page
Foreword	iv
Introduction	v
1 Scope	1
2 Normative references	1
3 Terms and definitions	1
3.1 General terms.....	1
3.2 Terms related to airborne particles.....	3
3.3 Terms related to air filters and systems.....	3
3.4 Terms related to airflow and other physical states.....	4
3.5 Terms related to electrostatic measurement.....	5
3.6 Terms related to measuring apparatus and measuring conditions.....	5
3.7 Terms related to occupancy states.....	6
4 Test procedures	6
4.1 Cleanroom tests.....	6
4.1.1 General.....	6
4.1.2 Supporting tests.....	7
4.2 Principle.....	7
4.2.1 Air pressure difference test.....	7
4.2.2 Airflow test.....	7
4.2.3 Airflow direction test and visualization.....	8
4.2.4 Recovery test.....	8
4.2.5 Temperature test.....	8
4.2.6 Humidity test.....	8
4.2.7 Installed filter system leakage tests.....	8
4.2.8 Containment leak test.....	8
4.2.9 Electrostatic and ion generator tests.....	8
4.2.10 Particle deposition test.....	8
4.2.11 Segregation test.....	9
5 Test reports	9
Annex A (informative) Choice of supporting tests and checklist	10
Annex B (informative) Supporting test methods	14
Annex C (informative) Test apparatus	44
Bibliography	52

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see www.iso.org/iso/foreword.html.

This document was prepared by ISO/TC 209, *Cleanrooms and associated controlled environments*.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

This second edition of ISO 14644-3 cancels and replaces the first edition (ISO 14644-3:2005), which has been technically revised. The main changes compared to the previous edition are as follows:

- [Clause B.7](#) has been simplified and corrected to address concerns over its complexity and noted errors;
- guidance concerning classification of air cleanliness by airborne particle concentration has been moved to 14644-1^[1]
- the text of the whole document has been revised or clarified to aid in application.

A list of all parts in the ISO 14644 series can be found on the ISO website.

Introduction

Cleanrooms and associated controlled environments provide control of contamination to levels appropriate for accomplishing contamination-sensitive activities. Products and processes that benefit from the control of airborne contamination include those in such industries as aerospace, microelectronics, pharmaceuticals, medical devices, healthcare and food.

This document sets out appropriate test methods for measuring the performance of a cleanroom, a clean zone or an associated controlled environment, including separative devices and controlled zones, together with all associated structures, air treatment systems, services and utilities.

NOTE Not all cleanroom parameter test procedures are shown in this document. The procedure and apparatus for the test carried out for the air cleanliness classes by particle concentration and for macroparticles are provided in ISO 14644-1,^[1] and specifications for monitoring air cleanliness by nanoscale particle concentrations are provided in ISO 14644-12.^[8] The procedures and apparatus to characterize other parameters, of concern in cleanrooms and clean zones used for specific products or processes, are discussed elsewhere in other documents prepared by ISO/TC 209 [for example, procedures for control and measurement of viable materials (ISO 14698 series), testing cleanroom functionality (ISO 14644-4^[3]), and testing of separative devices (ISO 14644-7^[4])]. In addition, other standards can be considered to be applicable. Other cleanliness attribute levels can be determined using ISO 14644-8^[5] (levels of air cleanliness by chemicals), ISO 14644-9^[6] (levels of surface cleanliness by particle concentration) and ISO 14644-10^[7] (levels of surface cleanliness by chemical concentration).

Cleanrooms and associated controlled environments —

Part 3: Test methods

1 Scope

This document provides test methods in support of the operation for cleanrooms and clean zones to meet air cleanliness classification, other cleanliness attributes and related controlled conditions.

Performance tests are specified for two types of cleanrooms and clean zones: those with unidirectional airflow and those with non-unidirectional airflow, in three possible occupancy states: as-built, at-rest and operational.

The test methods, recommended test apparatus and test procedures for determining performance parameters are provided. Where the test method is affected by the type of cleanroom or clean zone, alternative procedures are suggested.

For some of the tests, several different methods and apparatus are recommended to accommodate different end-use considerations. Alternative methods not included in this document can be used by agreement between customer and supplier. Alternative methods do not necessarily provide equivalent measurements.

This document is not applicable to the measurement of products or of processes in cleanrooms, clean zones or separative devices.

NOTE This document does not purport to address safety considerations associated with its use (for example, when using hazardous materials, operations and equipment). It is the responsibility of the user of this document to establish appropriate safety and health practices and to determine the applicability of regulatory limitations prior to use.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

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

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <http://www.electropedia.org/>

3.1 General terms

3.1.1

cleanroom

room within which the number concentration of *airborne particles* (3.2.1) is controlled and classified, and which is designed, constructed and operated in a manner to control the introduction, generation and retention of particles inside the room

Note 1 to entry: The class of airborne *particle concentration* (3.2.4) is specified.

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