
**High efficiency filters and filter media
for removing particles from air —**

**Part 1:
Classification, performance, testing
and marking**

*Filtres et media à très haute efficacité pour la rétention
particulaire —*

Partie 1: Classification, essais de performance et marquage



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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).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

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

For an explanation on 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 the following URL: www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 142, *Cleaning equipment for air and other gases*.

This second edition cancels and replaces the first edition (ISO 29463-1:2011), which has been technically revised.

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

- [Table 1](#) has been split into two tables;
- a definition for "particle diameter" has been added;
- it has been stated that the filter test certificate shall clearly indicate if the filter has been tested without seal fitted.

A list of all parts in the ISO 29463 series can be found on the ISO website.

Introduction

ISO 29463 (all parts) is derived from EN 1822 (all parts). It contains requirements, fundamental principles of testing and the marking for, high-efficiency particulate air filters with efficiencies from 95% to 99,999 995% that can be used for classifying filters in general or for specific use by agreement between users and suppliers.

ISO 29463 (all parts) establishes a procedure for the determination of the efficiency of all filters on the basis of a particle counting method using a liquid (or alternatively a solid) test aerosol, and allows a standardized classification of these filters in terms of their efficiency, both local and overall efficiency, which actually covers most needs of different applications. The difference between this document and other national standards lies in the technique used for the determination of the overall efficiency. Instead of mass relationships or total concentrations, this technique is based on particle counting at the most penetrating particle size (MPPS), which is for micro-glass filter mediums usually in the range of 0,12 μm to 0,25 μm . This method also allows testing ultra-low penetration air filters, which was not possible with the previous test methods because of their inadequate sensitivity. For membrane filter media, separate rules apply, and are described in ISO 29463-5:2011, Annex B. Although no equivalent test procedures for testing filters with charged media is prescribed, a method for dealing with these types of filters is described in ISO 29463-5:2011, Annex C. Specific requirements for testing method, frequency, and reporting requirements may be modified by agreement between supplier and customer. For lower efficiency filters (Group H, as described in [Clause 5](#)), alternate leak test methods noted in ISO 29463-4:2011, Annex A may be used by specific agreement between users and suppliers, but only if the use of these other methods is clearly designated in the filter markings, as noted in the annex. Although the methods prescribed in this document may be generally used to determine filter performance for nano-size particles, testing or classification of filters for nano-size particles are beyond the scope of this document (see [Annex A](#) for additional information).

There are differences between ISO 29463 (all parts) and other normative practices common in several countries. For example, many of these rely on total aerosol concentrations rather than individual particles. A brief summary of these methods and their reference standards is provided in ISO 29463-5:2011, Annex A.

High efficiency filters and filter media for removing particles from air —

Part 1: Classification, performance, testing and marking

1 Scope

This document establishes a classification of filters based on their performance, as determined in accordance with ISO 29463-3, ISO 29463-4 and ISO 29463-5. It also provides an overview of the test procedures, and specifies general requirements for assessing and marking the filters, as well as for documenting the test results. It is intended to be used in conjunction with ISO 29463-2, ISO 29463-3, ISO 29463-4 and ISO 29463-5.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 29463-2:2011, *High-efficiency filters and filter media for removing particles in air — Part 2: Aerosol production, measuring equipment and particle-counting statistics*

ISO 29463-3:2011, *High-efficiency filters and filter media for removing particles in air — Part 3: Testing flat sheet filter media*

ISO 29463-4:2011, *High-efficiency filters and filter media for removing particles in air — Part 4: Test method for determining leakage of filter elements-Scan method*

ISO 29463-5:2011, *High-efficiency filters and filter media for removing particles in air — Part 5: Test method for filter elements*

ISO 29464:2017, *Cleaning equipment for air and other gases — Terminology*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 29464 and the following apply.

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

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

3.1

filter medium

material used for filtering

3.2

folded pack

pack of the *filter medium* (3.1) formed by uniform individual folds