

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

## EESTI STANDARDI EESSÕNA

## NATIONAL FOREWORD

See Eesti standard EVS-EN ISO 29463-3:2018 sisaldab Euroopa standardi EN ISO 29463-3:2018 ingliskeelset teksti.	This Estonian standard EVS-EN ISO 29463-3:2018 consists of the English text of the European standard EN ISO 29463-3:2018.
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English Version

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

Filtres à haut rendement et filtres pour l'élimination  
des particules dans l'air - Partie 3: Méthode d'essai des  
filtres à feuille plate (ISO 29463-3:2011)

Schwebstofffilter und Filtermedien zur Abscheidung  
von Partikeln aus der Luft - Teil 3: Prüfung des planen  
Filtermediums (ISO 29463-3:2011)

This European Standard was approved by CEN on 6 May 2018.

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This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

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## European foreword

The text of ISO 29463-3:2011 has been prepared by Technical Committee ISO/TC 142 "Cleaning equipment for air and other gases" of the International Organization for Standardization (ISO) and has been taken over as EN ISO 29463-3:2018 by Technical Committee CEN/TC 195 "Air filters for general air cleaning" the secretariat of which is held by UNI.

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of an identical text or by endorsement, at the latest by April 2019, and conflicting national standards shall be withdrawn at the latest by April 2019.

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.

This document supersedes EN 1822-3:2009.

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## Endorsement notice

The text of ISO 29463-3:2011 has been approved by CEN as EN ISO 29463-3:2018 without any modification.

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## Introduction

ISO 29463 (all parts) is derived from EN 1822 (all parts) with extensive changes to meet the requests from non-EU p-members. 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 requirements of different applications. The difference between ISO 29463 (all parts) 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, for micro-glass filter mediums, is usually in the range of 0,12  $\mu\text{m}$  to 0,25  $\mu\text{m}$ . 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 they 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 test method, frequency, and reporting requirements can be modified by agreement between supplier and customer. For lower efficiency filters (group H, as described below), alternate leak test methods described in ISO 29463-4:2011, Annex A can 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 described in ISO 29463-4:2011, Annex A.

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. For information, a brief summary of these methods and their reference standards are provided in ISO 29463-5:2011, Annex A.

# High-efficiency filters and filter media for removing particles in air —

## Part 3: Testing flat sheet filter media

### 1 Scope

This part of ISO 29463 specifies the test procedure for testing the efficiency of flat sheet filter media. It is intended for use in conjunction with ISO 29463-1, ISO 29463-2, ISO 29463-4 and ISO 29463-5.

### 2 Normative references

The following referenced documents are indispensable for the application 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 29463-1:2011, *High-efficiency filters and filter media for removing particles in air — Part 1: Classification, performance, testing and marking*

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

ISO 29463-4:2011, *High-efficiency filters and filter media for removing particles in air — Part 4: Test method for determining leakage of filter element — 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<sup>1)</sup>, *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 29463-1, ISO 29463-2 and ISO 29464 apply.

### 4 Symbols and abbreviations

Table 1 presents the quantities (terms and symbols) used in this part of ISO 29463 to represent measurement variables and calculated values. The values should be inserted in the equation given for these calculations in the units specified.

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1) To be published.