



BSI Standards Publication

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

Part 4: Test method for determining leakage of filter elements - Scan method

This is a preview of "BS EN ISO 29463-4:20...". [Click here to purchase the full version from the ANSI store.](#)

National foreword

This British Standard is the UK implementation of EN ISO 29463-4:2018. It is identical to ISO 29463-4:2011. It supersedes BS EN 1822-4:2009, which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee MCE/21/3, Air filters other than for air supply for I.C. engines and compressors.

A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

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Filtres à haut rendement et filtres pour l'élimination des particules dans l'air - Partie 4: Méthode d'essai pour déterminer l'étanchéité de l'élément filtrant (méthode scan) (ISO 29463-4:2011)

Schwebstofffilter und Filtermedien zur Abscheidung von Partikeln aus der Luft - Teil 4: Prüfverfahren zur Ermittlung der Leckage des Filterelementes - Scan-Verfahren (ISO 29463-4:2011)

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

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CEN member.

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 COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

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European foreword

The text of ISO 29463-4:2011 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 29463-4:2018 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 1822-4:2009.

According to the CEN-CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Endorsement notice

The text of ISO 29463-4:2011 has been approved by CEN as EN ISO 29463-4:2018 without any modification.

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Contents

	Page
Foreword	v
Introduction	vi
1 Scope	1
2 Normative references	1
3 Terms and definitions	1
4 Principle	2
5 Test filter	3
6 Test apparatus	3
6.1 Set-up of the test apparatus.....	3
6.2 Test duct.....	6
6.2.1 Test air conditioning.....	6
6.2.2 Adjustment of the volume flow rate.....	6
6.2.3 Measurement of the volume flow rate.....	6
6.2.4 Aerosol mixing duct.....	6
6.2.5 Test filter mounting assembly.....	6
6.2.6 Measuring points for the pressure difference.....	6
6.2.7 Sampling, upstream.....	6
6.2.8 Screening.....	7
6.3 Scanning assembly.....	7
6.3.1 Sampling — Downstream.....	7
6.3.2 Probe arm.....	8
6.3.3 Aerosol transport lines.....	8
6.3.4 Provisions to move the probe.....	8
6.4 Aerosol generation and measurement techniques.....	8
6.4.1 General.....	8
6.4.2 Set-up for testing with a mono-disperse test aerosol.....	9
6.4.3 Set-up for testing with a poly-disperse test aerosol.....	9
7 Test air	9
8 Procedure	10
8.1 General.....	10
8.2 Preparatory checks.....	10
8.3 Starting up the aerosol generator.....	10
8.4 Preparing the test filter.....	11
8.4.1 Installing the test filter.....	11
8.4.2 Flushing the test filter.....	11
8.5 Testing.....	11
8.5.1 Measuring the pressure differential.....	11
8.5.2 Testing with mono-disperse test aerosol.....	11
8.5.3 Testing with poly-disperse test aerosol.....	12
8.5.4 Leak testing — Local penetration.....	12
9 Test report	12
10 Maintenance and inspection of the test apparatus	13
Annex A (normative) Oil thread leak test	15
Annex B (normative) Aerosol photometer filter scan test method	16
Annex C (normative) Determining the test parameters	20
Annex D (informative) Example of an application with evaluation	28
Annex E (informative) Leak test with solid PSL aerosol	31

This is a preview of "BS EN ISO 29463-4:20...". [Click here to purchase the full version from the ANSI store.](#)

Annex F (informative) 0,3 µm to 0,5 µm particle efficiency leak test	35
Annex G (informative) Calculation of aerosol challenge	37
Bibliography	39

This is a preview of "BS EN ISO 29463-4:20...". Click here to purchase the full version from the ANSI store.

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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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.

ISO 29463-4 was prepared by Technical Committee ISO/TC 142, *Cleaning equipment for air and other gases*.

ISO 29463 consists of the following parts, under the general title *High-efficiency filters and filter media for removing particles in air*:

- *Part 1: Classification, performance, testing and marking*
- *Part 2: Aerosol production, measuring equipment, particle-counting statistics*
- *Part 3: Testing flat sheet filter media*
- *Part 4: Test method for determining leakage of filter element — Scan method*
- *Part 5: Test method for filter elements*

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 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 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 [Annex A](#) of this part of ISO 29463 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 [Annex A](#) of this part of ISO 29463.

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.

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

Part 4: Test method for determining leakage of filter elements - Scan method

1 Scope

This part of ISO 29463 specifies the test procedure of the “scan method”, considered to be the reference method, for determining the leakage of filter elements. It is applicable to filters ranging from classes ISO 35 H to ISO 75 U. It also describes the other normative methods, the oil thread leak test (see [Annex A](#)) and the photometer leak test (see [Annex B](#)), applicable to classes ISO 35 H to ISO 45 H HEPA filters, and the leak test with solid PSL aerosol (see [Annex E](#)). It is intended for use in conjunction with ISO 29463-1, ISO 29463-2, ISO 29463-3 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 5167-1, *Measurement of fluid flow by means of pressure differential devices inserted in circular cross-section conduits running full — Part 1: General principles and requirements*

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

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

ISO 29464¹⁾, *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, ISO 29463-3, ISO 29463-5, ISO 29464 and the following apply.

3.1 sampling duration

time period during which the particles in the sample are counted upstream and downstream

1) To be published.