

<b>STN</b>	<b>Skúšobné metódy hodnotenia vlastností médií na čistenie plynných nečistôt vzduchu a zariadení na celkové vetranie. Časť 1: Médiá na čistenie plynných nečistôt vzduchu (ISO 10121-1: 2014).</b>	<b>STN EN ISO 10121-1</b>  12 5320
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Test method for assessing the performance of gas-phase air cleaning media and devices for general ventilation - Part 1: Gas-phase air cleaning media (ISO 10121-1:2014)

Táto norma obsahuje anglickú verziu európskej normy.  
This standard includes the English version of the European Standard.

Táto norma bola oznámená vo Vestníku ÚNMS SR č. 08/14

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English Version

Test method for assessing the performance of gas-phase air  
cleaning media and devices for general ventilation - Part 1: Gas-  
phase air cleaning media (ISO 10121-1:2014)

Méthodes d'essai pour l'évaluation de la performance des  
médias et des dispositifs de filtration moléculaire pour la  
ventilation générale - Partie 1: Médias de filtration  
moléculaire (GPACM) (ISO 10121-1:2014)

Methode zur Leistungsermittlung von Medien und  
Vorrichtungen zur Reinigung der Gasphase für die  
allgemeine Lüftung - Teil 1: Medien zur Reinigung der  
Gasphase (ISO 10121-1:2014)

This European Standard was approved by CEN on 6 March 2014.

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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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## **Foreword**

This document (EN ISO 10121-1:2014) has been prepared by Technical Committee ISO/TC 142 “Cleaning equipment for air and other gases” in collaboration with 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of an identical text or by endorsement, at the latest by October 2014, and conflicting national standards shall be withdrawn at the latest by October 2014.

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### **Endorsement notice**

The text of ISO 10121-1:2014 has been approved by CEN as EN ISO 10121-1:2014 without any modification.

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**Test method for assessing the  
performance of gas-phase air cleaning  
media and devices for general  
ventilation —**

**Part 1:  
Gas-phase air cleaning media**

*Méthodes d'essai pour l'évaluation de la performance des médias  
et des dispositifs de filtration moléculaire pour la ventilation  
générale —*

*Partie 1: Médias de filtration moléculaire (GPACM)*





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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](http://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 on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: Foreword - Supplementary information

The committee responsible for this document is ISO/TC 142, *Cleaning equipment for air and other gases*.

ISO 10121 consists of the following parts, under the general title *Test methods for assessing the performance of gas-phase air cleaning media and devices for general ventilation*:

- *Part 1: Gas-phase air cleaning media (GPACM)*
- *Part 2: Gas-phase air cleaning devices (GPACD)*



## Introduction

There is an increasing use and need for gas-phase filtration in general filtration applications. This demand can be expected to increase rapidly due to the increasing pollution problems in the world together with an increasing awareness that solutions to the problems are available in the form of filtration devices or phrased more technically: gas-phase air cleaning devices (GPACD). The performance of devices using adsorption for gas removal relies to a large extent on the performance of a solid gas-phase air cleaning media (GPACM) incorporated in the device. Still applications, device performance and media performance are often poorly understood by the user and supplier of such media and devices. Media tests may also be adequate to offer data for real applications if actual low concentrations (<100 ppb) and longer exposure times (>weeks) can be used in the test, provided that the geometrical configuration, packing density and flow conditions of the small-scale test specimen are equal to those used in the real applications. Such tests are however not included in the scope of this part of ISO 10121. This part of ISO 10121 attempts to increase understanding and communication by supplying a more standardized interface between media suppliers, device suppliers and end users. At present, standards exist for general ventilation in Japan<sup>[1]</sup> by JIS, Automotive filters by ISO, in-duct sorptive media gas-phase air cleaning devices by ASHRAE<sup>[2]</sup> and for adsorptive media by ASHRAE<sup>[3]</sup> and ASTM.<sup>[5]</sup> No international standard for general filtration exists today.

This part of ISO 10121 provides methods, test equipment, data interpretation and reporting for three different types of gas-phase air cleaning media (GPACM) intended for use in gas-phase air cleaning devices (GPACD) for general ventilation applications.

In addition information is given in a number of annexes:

- [Annex A](#) describes the normative validation procedure in detail in a tabulated form.
- [Annex B](#) gives a list of possible test gases, generation sources and suggests proper analysis equipment for common test gases
- [Annex C](#) describes the design of the test stand except the normative sample holder.
- [Annex D](#) describes the normative test setup and normative section of the test stand for the three different media configurations.

A general introduction to molecular filtration and molecular filtration testing can be found in the scientific literature.

The ISO 10121 series aims to provide laboratory test methods for media and devices which are used for removal of gas-phase contaminants from air in general ventilation. It consists of two parts:

- ISO 10121-1 covers three different media configurations and is targeted towards giving a standardized interface between media suppliers and producers of air cleaning devices. It may also be used between media suppliers and end customers with regards to loose fill media properties.
- ISO 10121-2 aims to give a standardized interface between suppliers of air cleaning devices and end customers seeking the best performing and most economical way to employ gas-phase filtration.



# Test method for assessing the performance of gas-phase air cleaning media and devices for general ventilation —

## Part 1: Gas-phase air cleaning media

### 1 Scope

This part of ISO 10121 aims to provide an objective laboratory test method, a suggested apparatus, normative test sections and normative tests for evaluation of three different solid gas-phase air cleaning media (GPACM) or GPACM configurations for use in gas-phase air cleaning devices intended for general filtration applications. This part of ISO 10121 is specifically intended for challenge testing and not for general material evaluation or pore system characterization. The three different types of GPACM identified in this part of ISO 10121 are GPACM-LF (particles of different shape and size intended for e.g. Loose Fill applications), GPACM-FL (Flat sheet fabric intended for e.g. flat one layer, pleated or bag type devices) and GPACM-TS (three dimensional structures that are many times thicker than flat sheet and e.g. used as finished elements in a device). The tests are conducted in an air stream and the GPACM configurations are challenged with test gases under steady-state conditions. Since elevated gas challenge concentrations (relative to general ventilation applications) are used, test data should be used to compare GPACM within the same configuration and not for the purpose of predicting performance in a real situation. It is also not implied that different GPACM configurations can be directly compared. The primary intention is to be able to compare like GPACM configurations to like, not between GPACM configurations. Testing of complete devices is described in ISO 10121-2.

To ensure objectivity for test equipment suppliers, no specific design of the test apparatus is defined: an example is illustrated in [Annex C](#) (informative). Instead normative demands for media sample holder design, apparatus properties and validation tests are specified.

### 2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 10121-2, *Test methods for assessing the performance of gas-phase air cleaning media and devices for general ventilation — Part 2: Gas-phase air cleaning devices (GPACD)*

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

ASTM D2854, *Standard Test Method for Apparent Density of Activated Carbon*

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