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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)*



Reference number  
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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)).

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](http://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 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)*

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## 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.