



IEC 61591

Edition 3.0 2023-03  
COMMENTED VERSION

# INTERNATIONAL STANDARD



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**Cooking fume extractors – Methods for measuring performance**

INTERNATIONAL  
ELECTROTECHNICAL  
COMMISSION

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ICS 97.040.20

ISBN 978-2-8322-6733-2

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## INTERNATIONAL ELECTROTECHNICAL COMMISSION

**COOKING FUME EXTRACTORS –  
METHODS FOR MEASURING PERFORMANCE**

## FOREWORD

- 1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
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**This commented version (CMV) of the official standard IEC 61591:2023 edition 3.0 allows the user to identify the changes made to the previous IEC 61591:2019 edition 2.0. Furthermore, comments from IEC SC 59K experts are provided to explain the reasons of the most relevant changes, or to clarify any part of the content.**

**A vertical bar appears in the margin wherever a change has been made. Additions are in green text, deletions are in strikethrough red text. Experts' comments are identified by a blue-background number. Mouse over a number to display a pop-up note with the comment.**

**This publication contains the CMV and the official standard. The full list of comments is available at the end of the CMV.**

IEC 61591 has been prepared by subcommittee 59K: Performance of household and similar electrical cooking appliances, of IEC technical committee 59: Performance of household and similar electrical appliances. It is an International Standard.

This third edition cancels and replaces the second edition published in 2019. This edition constitutes a technical revision.

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

- a) new definition of **working point**, see 3.19;
- b) new definition for **lowest setting** and **automatic setting**, see 3.17 and 3.18;
- c) revised requirements for installation and positioning, see 6.2;
- d) added a normative reference ISO 5801 for the specification of the pressure compensation chamber, see Clause 10;
- e) separate clauses for determining the volumetric airflow and fluid dynamic efficiency, see Clauses 10 and 11;
- f) new approach for determining the fluid dynamic efficiency ("9-point calculation");
- g) new definitions, new clause and new Annex B regarding the measurement of low-power modes;
- h) new Annex A: assumption for the parameter *b*.

The text of this International Standard is based on the following documents:

Draft	Report on voting
59K/352/CDV	59K/361/RVC

Full information on the voting for its approval can be found in the report on voting indicated in the above table.

The language used for the development of this International Standard is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at [www.iec.ch/members\\_experts/refdocs](http://www.iec.ch/members_experts/refdocs). The main document types developed by IEC are described in greater detail at [www.iec.ch/publications](http://www.iec.ch/publications).

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# COOKING FUME EXTRACTORS – METHODS FOR MEASURING PERFORMANCE

## 1 Scope

This document applies to **cooking fume extractors** incorporating a fan for the **recirculation** or **extraction mode** situated in a household kitchen.

It can also be used for **cooking fume extractors** where the fan is mounted separately from the appliance, but controlled by the appliance when the fan is defined in the technical documentation (e.g. name plate data) and instructions for installation.

This document deals also with **down-draft systems** arranged beside, behind or under the cooking appliance.

This document defines the main performance characteristics of these appliances, which are of interest to the user, and specifies methods for measuring these characteristics.

This document does not specify a classification or ranking for performance.

NOTE 1 This document does not deal with safety requirements that are in accordance with IEC 60335-1 and IEC 60335-2-31.

NOTE 2 **Cooking fume extractors** without fans operated by a central ventilation system are covered in EN 13141-3.

## 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.

IEC 60584-1, *Thermocouples – Part 1: EMF specifications and tolerances*

IEC 60704-2-13, *Household and similar electrical appliances – Test code for the determination of airborne acoustical noise – Part 2-13: Particular requirements for range hoods and other cooking fume extractors*

IEC 60751, *Industrial platinum resistance thermometers and platinum temperature sensors*

IEC 62301:2011, *Household electrical appliances – Measurement of standby power*

IEC 63474:—<sup>1</sup>, *Electrical and electronic household and office equipment – Measurement of networked standby power consumption of edge equipment*

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 5167-2, *Measurement of fluid flow by means of pressure differential devices inserted in circular cross-section conduits running full – Part 2: Orifice plates*

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<sup>1</sup> Under preparation. Stage at the time of development: IEC CDV 63474:2022.

ISO 5167-3, *Measurement of fluid flow by means of pressure differential devices inserted in circular cross-section conduits running full – Part 3: Nozzles and Venturi nozzles*

ISO 5167-4, *Measurement of fluid flow by means of pressure differential devices inserted in circular cross-section conduits running full – Part 4: Venturi tubes*

ISO 5801:2017, *Fans – Performance testing using standardized airways*

ISO 80000-1:2009, *Quantities and units – Part 1: General*



# INTERNATIONAL STANDARD

# NORME INTERNATIONALE



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**Cooking fume extractors – Methods for measuring performance**

**Extracteurs de fumée de cuisine – Méthodes de mesure de l'aptitude à la fonction**

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## COMMISSION ÉLECTROTECHNIQUE INTERNATIONALE

**EXTRACTEURS DE FUMÉE DE CUISINE –  
MÉTHODES DE MESURE DE L'APTITUDE À LA FONCTION**

## AVANT-PROPOS

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L'IEC 61591 a été établie par le sous-comité 59K: Aptitude à la fonction des appareils électrodomestiques et similaires de cuisson électrique, du comité d'études 59 de l'IEC: Aptitude à la fonction des appareils électrodomestiques et analogues. Il s'agit d'une Norme internationale.

Cette troisième édition annule et remplace la deuxième édition parue en 2019. Cette édition constitue une révision technique.

Cette édition inclut les modifications techniques majeures suivantes par rapport à l'édition précédente:

- a) redéfinition du terme "point de fonctionnement" (voir 3.20);
- b) redéfinition des termes "**réglage le plus bas**" et "réglage automatique" (voir 3.23 et 3.24);
- c) révision des exigences concernant l'installation et le positionnement (voir 6.2);

- d) ajout de la référence normative ISO 5801 pour la spécification de la chambre de compensation de pression (voir Article 10);
- e) création d'articles distincts concernant la détermination du débit d'air volumétrique et du rendement dynamique des fluides (voir Articles 10 et 11);
- f) nouvelle approche concernant la détermination du rendement dynamique des fluides ("calcul en 9 points");
- g) nouvelles définitions, nouvel article et nouvelle Annexe B concernant la mesure des modes faible puissance;
- h) nouvelle Annexe A: hypothèse formulée pour le paramètre b.

Le texte de cette Norme internationale est issu des documents suivants:

Projet	Rapport de vote
59K/352/CDV	59K/361/RVC

Le rapport de vote indiqué dans le tableau ci-dessus donne toute information sur le vote ayant abouti à son approbation.

La langue employée pour l'élaboration de cette Norme internationale est l'anglais.

Ce document a été rédigé selon les Directives ISO/IEC, Partie 2, il a été développé selon les Directives ISO/IEC, Partie 1 et les Directives ISO/IEC, Supplément IEC, disponibles sous [www.iec.ch/members\\_experts/refdocs](http://www.iec.ch/members_experts/refdocs). Les principaux types de documents développés par l'IEC sont décrits plus en détail sous [www.iec.ch/publications](http://www.iec.ch/publications).

Dans la présente norme, les caractères d'imprimerie suivants sont utilisés:

- termes répertoriés à l'Article 3: **Arial gras**.

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## EXTRACTEURS DE FUMÉE DE CUISINE – MÉTHODES DE MESURE DE L'APTITUDE À LA FONCTION

### 1 Domaine d'application

Le présent document s'applique aux **extracteurs de fumée de cuisine** comportant un ventilateur pour le **mode recyclage** ou **extraction**, installés dans une cuisine à usage domestique.

Il peut également être utilisé pour les **extracteurs de fumée de cuisine** lorsque le ventilateur est monté séparément de l'appareil, mais est commandé par celui-ci lorsqu'il est mentionné dans la documentation technique (données inscrites sur la plaque signalétique, par exemple) et dans les instructions d'installation.

Le présent document couvre également les **extracteurs verticaux** installés à côté, à l'arrière ou au-dessous de l'appareil de cuisson.

Le présent document définit les caractéristiques de performance principales de ces appareils qui sont pertinentes pour l'utilisateur et spécifie les méthodes de mesure de ces caractéristiques.

Le présent document ne spécifie pas un système de classement pour l'aptitude à la fonction de ces appareils.

NOTE 1 Le présent document ne traite pas des exigences de sécurité qui sont conformes aux normes IEC 60335-1 et IEC 60335-2-31.

NOTE 2 Les **extracteurs de fumée de cuisine** sans ventilateur actionnés par un système de ventilation centralisé sont couverts par l'EN 13141-3.

### 2 Références normatives

Les documents suivants sont cités dans le texte de sorte qu'ils constituent, pour tout ou partie de leur contenu, des exigences du présent document. Pour les références datées, seule l'édition citée s'applique. Pour les références non datées, la dernière édition du document de référence s'applique (y compris les éventuels amendements).

IEC 60584-1, *Couples thermoélectriques – Partie 1: Spécifications et tolérances en matière de FEM*

IEC 60704-2-13, *Appareils électrodomestiques et analogues – Code d'essai pour la détermination du bruit aérien – Partie 2-13: Exigences particulières pour les hottes de cuisine et autres extracteurs de fumées de cuisine*

IEC 60751, *Thermomètres à résistance de platine industriels et capteurs thermométriques en platine*

IEC 62301:2011, *Appareils électrodomestiques – Mesure de la consommation en veille*

IEC 63474:—<sup>1</sup>, *Appareils électriques et électroniques pour application domestique et équipement de bureau – Mesure de la consommation d'énergie en veille avec maintien de la connexion au réseau des équipements de périphérie*

ISO 5167-1, *Mesurage de débit des fluides au moyen d'appareils déprimogènes insérés dans des conduites en charge de section circulaire – Partie 1: Principes généraux et exigences générales*

ISO 5167-2, *Mesurage de débit des fluides au moyen d'appareils déprimogènes insérés dans des conduites en charge de section circulaire – Partie 2: Diaphragmes*

ISO 5167-3, *Mesurage de débit des fluides au moyen d'appareils déprimogènes insérés dans des conduites en charge de section circulaire – Partie 3: Tuyères et Venturi-tuyères*

ISO 5167-4, *Mesurage de débit des fluides au moyen d'appareils déprimogènes insérés dans des conduites en charge de section circulaire – Partie 4: Tubes de Venturi*

ISO 5801:2017, *Ventilateurs – Essais aérauliques sur circuits normalisés*

ISO 80000-1:2009, *Grandeurs et unités – Partie 1: Généralités*

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<sup>1</sup> En cours d'élaboration. Stade au moment de la publication: IEC CDV 63474:2022.