

# INTERNATIONAL STANDARD

## NORME INTERNATIONALE

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 60704-2-13:2016](https://standards.iteh.ai/catalog/standards/sist/346c7b07-e7ff-40df-aa23-77c101049226/iec-60704-2-13-2016)

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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 fumée de cuisine



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INTERNATIONAL  
ELECTROTECHNICAL  
COMMISSION

COMMISSION  
ELECTROTECHNIQUE  
INTERNATIONALE

ICS 17.140.20; 97.040.20

ISBN 978-2-8322-3721-2

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**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**

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International Standard IEC 60704-2-13 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.

This third edition cancels and replaces the second edition published in 2011. This edition constitutes a technical revision.

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

- a) change of title, scope and definitions 3.103 and 3.104: the standard is dealing with cooking fume extractors (this covers range hoods and down-draft systems);
- b) exhaust pipe of down-draft systems specified;

- c) built-in recirculation-air range hoods with an air outlet device specified;
- d) Annex AA has been deleted.

The text of this standard is based on the following documents:

CDV	Report on voting
59K/272/CDV	59K/283/RVC

Full information on the voting for the approval of this International Standard can be found in the report on voting indicated in the above table.

This document has been drafted in accordance with the ISO/IEC Directives, Part 2.

This Part 2-13 is intended to be used in conjunction with IEC 60704-1:2010 (3rd edition), *Household and similar electrical appliances – Test code for the determination of airborne acoustical noise – Part 1: General requirements*.

NOTE 1 When "Part 1" is mentioned in this standard, it refers to IEC 60704-1.

This Part 2-13 supplements or modifies the corresponding clauses in IEC 60704-1, so as to establish the test code for cooking fume extractors. When a particular subclause of Part 1 is not mentioned in this Part 2-13, that subclause is applicable as far as reasonable. Where this standard states "addition", "modification" or "replacement", the relevant requirements, test specifications or explanatory matter in Part 1 are to be adapted accordingly.

Subclauses, tables and figures that are numbered starting from 101 are additional to those in Part 1. Additional annexes are lettered AA, BB, etc.

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Unless notes are in a new subclause or involve notes in Part 1, they are numbered starting from 101, including those in a replaced clause or subclause.

A list of all parts in the IEC 60704 series, published under the general title *Household and similar electrical appliances – Test code for the determination of airborne acoustical noise*, can be found on the IEC website.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under "<http://webstore.iec.ch>" in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

## INTRODUCTION

The measuring conditions specified in this part of IEC 60704 provide for sufficient accuracy in determining the noise emitted and comparing the results of measurements taken by different laboratories, whilst simulating as far as possible the practical use of household range hoods and other cooking fume extractors.

It is recommended to consider the determination of noise levels as part of a comprehensive testing procedure covering many aspects of the properties and performance of household range hoods and other cooking fume extractors.

NOTE As stated in the introduction to IEC 60704-1, this test code is concerned with airborne noise only.

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# 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

### 1 Scope and object

This clause of Part 1 is applicable except as follows:

#### 1.1 Scope

##### 1.1.1 General

*Addition:*

These particular requirements apply to electrical range hoods and other cooking fume extractors for household and similar use intended for filtering the air of a room or for exhausting the air out of a room, including their accessories and their component parts. It also applies to cooking fume extractors with an external fan which may be mounted inside or outside of the room where the range hood is located or a down-draft system that is arranged beside, behind or under the cooking surface.

##### 1.1.2 Types of noise

[IEC 60704-2-13:2016](https://standards.iteh.ai/catalog/standards/sist/346c7b07-e7ff-40df-aa23-983b78134384/iec-60704-2-13-2016)

*Replacement:* <https://standards.iteh.ai/catalog/standards/sist/346c7b07-e7ff-40df-aa23-983b78134384/iec-60704-2-13-2016>

The methods specified in ISO 3743-1, ISO 3743-2 and ISO 3744 can be used for measuring noise emitted by cooking fume extractors.

##### 1.1.3 Size of source

*Replacement:*

The method specified in ISO 3744 is applicable to noise sources of any size. When applying ISO 3743-1 and ISO 3743-2, care should be taken that the maximum size of the cooking fume extractor under test fulfils the requirements specified in 1.2 of ISO 3743-1 and 1.3 of ISO 3743-2.

### 1.2 Object

*Addition:*

This standard describes the determination of the noise emission of household cooking fume extractors under normal operating conditions and at the highest fan speed setting for normal use.

NOTE 101 If a boost position is incorporated, this is not taken into account (see 6.5 of IEC 61591:1997).

NOTE 102 A boost position is a setting of a control for occasional use, which results in a higher temporary fan speed (see 6.5 of IEC 61591:1997).

Requirements for the declaration of noise emission values are not within the scope of this standard.



NOTE 103 For determining and verifying noise emission values declared in product specifications, see IEC 60704-3.

### 1.3 Measurement uncertainty

*Replacement:*

The estimated values of standard deviations of sound power levels, determined according to this standard, are as follows (see Table 101):

**Table 101 – Standard deviations of sound power levels**

Standard deviation (dB)	
$\sigma_r$ (repeatability)	$\sigma_R$ (reproducibility)
0,4	1,0

*Addition:*

#### 1.101 Standard deviation for declaration and verification

For the purpose of determining and verifying declared noise emission values according to IEC 60704-3, the following values apply (see Table 102):

**Table 102 – Standard deviations for declaration and verification**

Standard deviation (dB)		
$\sigma_P$ (production)	$\sigma_t$ (total)	$\sigma_M$ (reference)
1,5 to 1,7	1,8 to 2,0	2,0

## 2 Normative references

This clause of Part 1 is applicable except as follows:

*Replacement:*

ISO 3743-1:2010, *Acoustics – Determination of sound power levels and sound energy levels of noise sources using sound pressure – Engineering methods for small movable sources in reverberant fields – Part 1: Comparison method for a hard-walled test room*

ISO 3744:2010, *Acoustics – Determination of sound power levels and sound energy levels of noise sources using sound pressure – Engineering methods for an essentially free field over a reflecting plane*

*Addition:*

IEC 61591:1997, *Household range hoods - Methods for measuring performance*  
 IEC 61591:1997/AMD1:2005<sup>1</sup>  
 IEC 61591:1997/AMD2:2010

ISO 7235:2003, *Acoustics – Laboratory measurement procedures for ducted silencers and air-terminal units – Insertion loss, flow noise and total pressure loss*

<sup>1</sup> There exists a consolidated edition 1.1 of IEC 61591 (2005), that includes IEC 61591 (1997) and its amendment 1 (2005).

### 3 Terms and definitions

This clause of Part 1 is applicable except as follows:

*Addition:*

#### 3.101

##### **cooking fume extractor**

device intended to collect cooking vapours, smells and fumes

Note 1 to entry: The filtered air may be discharged back into the room or away by ducts. Examples are: range hoods, down-draft systems or range hoods with external fans.

#### 3.102

##### **range hood**

appliance installed over a hob and through which air is passed to remove contaminants from the room

[SOURCE: IEC 61591:1997, 3.1]

#### 3.103

##### **recirculation-air cooking fume extractor**

range hood or other cooking fume extractor containing filters to remove contaminants, after which the cleaned air is discharged back into the room

[SOURCE: IEC 61591:1997, 3.2, modified, – in the term, "range hood" was replaced by "cooking fume extractor" and " or other cooking fume extractor" was added in the definition.]

#### 3.104

##### **air-extracting cooking fume extractor**

range hood or other cooking fume extractor which discharges the collected air to the outside of the building by means of ducting

Note 1 to entry: The range hood can incorporate an internal or external fan.

[SOURCE: IEC 61591:1997, 3.3, modified – in the term, "range hood" was replaced by "cooking fume extractor" and " or other cooking fume extractor" was added in the definition ]

#### 3.105

##### **down-draft system**

cooking fume extractor intended for installation adjacent to a household cooking range, hob or similar cooking appliance that draws vapour down into an internal or external exhaust duct

[SOURCE: IEC 61591:1997/AMD2:2010, 3.9]

### 4 Measurement methods and acoustical environments

This clause of Part 1 is applicable except as follows:

#### 4.2 Direct method

*Addition:*

NOTE 101 If pure tone components are present in the noise emitted by the source, the estimated standard deviation of the measured sound pressure levels in the special reverberation room may increase. In such cases additional microphone positions or source positions may be necessary as specified in ISO 3743-2.

### 4.3 Comparison method

*Addition:*

NOTE 101 If pure tone components are present in the noise emitted by the source, the estimated standard deviation of the measured sound pressure levels in the hard-walled test room or in the special reverberation room may increase. In such cases additional microphone positions or source positions may be necessary as specified in ISO 3743-1 or ISO 3743-2.

## 5 Instrumentation

This clause of Part 1 is applicable except as follows:

### 5.1 Instrumentation for measuring acoustical data

*Addition:*

Windscreens should be used if necessary and then corrections for change in the microphone sensitivity shall be added to the observed sound pressure levels.

## 6 Operation and location of appliances under test

This clause of Part 1 is applicable except as follows:

### 6.1 Equipping and pre-conditioning of appliances

#### 6.1.1

*Addition:*

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Recirculation-air cooking fume extractors should be fitted with (a) clean filter(s).

Air-extraction cooking fume extractors shall be fitted with the pipe coupling ring, if any, having the largest diameter among those provided by the manufacturer. If the cooking fume extractor is designed to accommodate additional filters, those filters shall be clean and appropriately fitted.

#### 6.1.3

*Replacement:*

Prior to noise measurements, the cooking fume extractor shall have been in operation for running for at least 4 h at the highest speed setting for normal use (see notes in 1.2).

#### 6.1.4

*Replacement:*

Immediately before each series of noise measurements, the cooking fume extractor equipped for its intended use is operated to stabilize at the highest speed setting for normal use (see notes in 1.2) for at least 10 min.

### 6.2 Supply of electrical energy and of water or gas

6.2.3 and 6.2.4 Not applicable.

## 6.4 Loading and operating of appliances during test

### 6.4.2

#### *Replacement:*

The appliances shall be equipped according to 6.1.1.

The cooking fume extractor shall be operated at the highest speed setting for normal use (see notes in 1.2).

Air-extraction cooking fume extractors shall be loaded using a pipe connected to a muffler according to Figure 101. The pipe shall be rigid with smooth inner walls and shall have the widest diameter among those specified by the manufacturer. If not stated, a standard pipe with the best fitting diameter shall be used. The muffler shall have an insertion loss as specified in the table of Figure 101. It shall have a circular section with the same internal diameter as that of the pipe, a length as specified in Figure 101 and shall not have parts protruding inside that may cause additional pressure drops. The pipe and the muffler shall also comply with all the specifications reported in Figure 101 and care shall be taken that they do not radiate noise.

Cooking fume extractors with an external fan shall be connected to the fan with a pipe and a muffler according to Figure 103. The pipe shall be rigid with smooth inner walls and shall have the widest diameter among those specified by the manufacturer. If not stated, a standard pipe with the best fitting diameter shall be used. The muffler shall be provided with the appliance. If the manufacturer did not provide a muffler, the appliance is tested without muffler.

In particular, when connecting the pipe and muffler system to the cooking fume extractor, care shall be taken that this connection does not transfer any additional structure borne noise. For this purpose, isolating connecting pieces can be used.

Static forces from the standard load to the cooking fume extractor shall also be avoided.

The fastening of the muffler should not influence the acoustical field in the test room; for example, two wires could be fixed around the muffler and on the ceiling.

Whenever it is possible to choose among two or more exit holes for the pipe connection, the one on the upper side of the cooking fume extractor, if any, shall be used.

Cooking fume extractors designed for connection with more than one pipe at the same time shall be connected accordingly to the number of pipes required.

**6.4.3** Not applicable.

## 6.5 Location and mounting of appliances

### 6.5.1

#### *Replacement:*

Range hoods not intended to be placed against a wall shall be located and mounted according to 6.5.4.

**6.5.2** Not applicable.

### 6.5.3

#### *Addition:*