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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

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Also of interest to the following committees Intéresse également les comités suivants		Supersedes document Remplace le document <b>59/363/DTR and 59/369A/RVC</b>	
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Titre :

Title : IEC 60704-2-13-A1 Ed 1.0: Household and similar electrical appliances – Test code for the determination of airborne acoustical noise – Part 2-13: Particular requirements for range hoods

Note d'introduction

Introductory note

This amendment was already circulated as DTR and now it has been determined that the document should be an amendment to 60704-2-13.

This amendment to 60704-2-13 describes an alternative method for determination of airborne acoustical noise emitted by range hoods.

The clauses of this amendment supplement or modify the corresponding clauses in IEC Publication 60704-2-13.

This method shall neither be used for the declaration, nor for the verification.

<b>ATTENTION</b> <b>CDV soumis en parallèle au vote (CEI) et à l'enquête (CENELEC)</b>	<b>ATTENTION</b> <b>Parallel IEC CDV/CENELEC Enquiry</b>
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## FOREWORD

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This technical specification has been prepared by IEC technical committee 59:  
Performance of household electrical appliances.

The text of this technical report is based on the following documents:

FDIS	Result on voting
59/XX/FDIS	59/XX/RDV

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

This technical specification has been drafted in accordance with ISO/IEC Directives, part 3.

This annex is intended to be used in conjunction with IEC Publication 60704-2-13: "Test code for the determination of airborne acoustical noise emitted by household and similar electrical appliances - Part 2: Particular requirements for range hoods".

The clauses of this annex supplement or modify the corresponding clauses in IEC Publication 60704-2-13.

Where a particular subclause of part 2-13 is not mentioned in this annex, that subclause applies as far as reasonable. Where this annex states "addition", "modification" or "replacement", the relevant requirements, test specifications or explanatory matter in 60704-2-13 shall be adapted accordingly.

The committee has decided that this publication remains valid until 2007. At this date, in accordance with the committee's decision, the publication will be:

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

## **INTRODUCTION**

This Technical Specification will introduce a description of the intensimetric method for the determination of sound power levels of range hoods. According to this method, the sound power level is obtained by measuring the component of sound intensity normal to a measurement surface that surrounds the range hood.

## Intensimetric method for the determination of sound power levels of range hoods, description of the procedure differing to IEC 60704-2-13

### 1 Scope and object

This clause of part 2-13 is applicable except as follows:

#### 1.1.1 General

*Addition:*

Intensimetric method for the determination of sound power levels shall not be used for the purpose of verification.

#### 1.1.2 Types of noise

*Replacement:*

The method is applicable to any source for which a physically stationary measurement surface can be defined, and on which the noise generated by the source is stationary in time (as defined in Section 3), therefore it is not suitable for sources of impulsive noise consisting of short duration noise bursts. This method is not suitable if the source under test has significant noise over 6.3 kHz in one-third-octave band centre frequencies and over 4 kHz in one-octave band centre frequencies.

#### 1.1.3 Size of the source

*Replacement:*

The size of the noise source is unrestricted. The extent of the source is defined by the choice of the measurement surface.

### 1.3 Measurement uncertainty

*Replacement:*

The uncertainty in the determination of the sound power level of a noise source is related:

- to the nature of the sound field of the source,
- to the nature of the extraneous sound field,
- to the absorption of the source under test,
- to the type of intensity-field sampling and measurement procedure employed.

The normal range for A-weighted data is covered by the one-octave bands from 63 Hz to 4 kHz, and the one-third-octave bands from 50 Hz to 6,3 kHz. The estimated values of standard deviations of sound power levels, determined according to this standard for both *Discrete points method* and *Scanning method* are:

Standard deviation (dB)	
$\sigma_r$ (repeatability)	$\sigma_R$ (reproducibility)
1.5	2.0

## 2. Normative References

This clause of Part 2-13 is applicable except as follows:

*Addition:*

IEC 942:1988, *Sound calibrators.*

IEC 1043: 1993, *Instruments for the measurement of sound intensity.*

ISO 9614 - 1: 1993, *Acoustics – Determination of sound power levels of noise sources using sound intensity – Part 1: Measurement at discrete points.*

ISO 9614 - 2: 1996, *Acoustics – Determination of sound power levels of noise sources using sound intensity – Part 2: Measurement by scanning.*

## 3. Terms and definitions

This clause of Part 2-13 is applicable except as follows:

### 3.1 Terms and definitions pertinent to determination of sound power levels

*Replacement:*

These may be found in ISO 9614 – 1 and in ISO 9614-2.

## 4. Measurement methods and acoustical environments

This clause of Part 2-13 is applicable except as follows:

### 4.1 General

*Replacement:*

The total noise emitted by machinery or equipment, and radiated in all directions to the space surrounding the machine, can be characterized by the sound power of the machine. The sound power of a machine is essentially independent of the environment in which the machine is installed.

Therefore, the concept of sound power level has been chosen for expressing the noise emission of appliances for household and similar purposes.

The preferred noise emission quantity is the A-weighted sound power level, in decibels (re. 1 pW).

According to this annex, one method is used, the direct method as described in 4.2 below.

### 4.2 Direct method

*Replacement:*

The measurement can be performed according to two intensimetric methods, the "discrete points method" and the "scanning method", as described below.



***Discrete points method:***

Define, as the measurement surface, a parallelepiped-shaped surface around the range hood; then divide it in partial areas (segment) so as to obtain a grid. The dimension of the parallelepiped depends on the dimension of the range hood: the distance between each face of the parallelepiped and the range hood under test depends on the value of  $F_2$  and  $F_3$  indicators (see annexes A and B of ISO 9614-1) but shall be at least 10 cm. The density of measurement positions on parallelepiped faces depends on extraneous noise and on the value of  $F_4$  indicator (see annexes A and B of ISO 9614-1). The total sound power of source is obtained from calculation of partial sound power of each segment of parallelepiped, by multiplying the "local" intensity sound by its partial area, and then by adding all the partial sound powers (absolute value).

***Scanning method:***

This method is very similar to the previous one, with the only difference that each face of the parallelepiped is not divided in partial areas, but is continuously scanned with the intensimetric probe, and the space and time average of intensity sound is multiplied by its area; then the total sound power of the range hood is obtained by adding the partial sound powers of each face of the parallelepiped.

NOTE - The distance of 20 cm between each face of the parallelepiped and the range hood is usually acceptable.

**4.3** Not applicable

**4.4 Acoustical environments****4.4.1 General requirements and criterion for adequacy of the test environment**

*Replacement:*

***Discrete points method:***

They are given in clauses 4 and 5 of ISO 9614-1.

***Scanning method:***

They are given in clauses 4 and 5 of ISO 9614-2.

**4.4.2 Criterion for background noise level**

Not applicable.

**5. Instrumentation**

This clause of Part 2-13 is applicable except as follows:

**5.1 Instrumentation for measuring acoustical data**

*Addition:*

Sound intensity measurement instruments and probe that meet the requirements of IEC 61043 shall be used. Class 1 instruments shall be used.

To check the instrumentation for proper operation prior to each series of measurements, the field-check procedure specified by manufacturer shall be applied.

**6. Operation and location of appliances under test**

This clause of Part 2-13 is applicable except as follows: