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INTERNATIONAL STANDARD

NORME INTERNATIONALE

Household and similar electrical appliances – Test code for the determination of airborne acoustical noise – Part 2-6: Particular requirements for tumble dryers

Appareils électrodomestiques et analogues – Code d'essai pour la détermination du bruit aérien – Partie 2-6: Règles particulières pour les sèche-linge à tambour

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES – TEST CODE FOR THE DETERMINATION OF AIRBORNE ACOUSTICAL NOISE –

Part 2-6: Particular requirements for tumble dryers

FOREWORD

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International Standard IEC 60704-2-6 has been prepared by subcommittee 59D: Home laundry appliances, of IEC technical committee 59: Performance of household electrical appliances.

This third edition cancels and replaces the second edition published in 2003. This edition constitutes a technical revision.

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

a) it does not contain the description of an appropriate test enclosure which has been incorporated in Part 1;
b) it clarifies that only appliances designed for front loading and specified by the manufacturer for building-in, under a counter or placing under a worktop between cabinets (under-counter types) shall be placed in a test enclosure.

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

FDIS	Report on voting
59D/394/FDIS	59D/397/RVD

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

This Part 2-6 is intended to be used in conjunction with the third edition (2010) of IEC 60704-1, *Household and similar electrical appliances – Test code for the determination of airborne acoustical noise – Part 1: General requirements*.

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

This Part 2-6 supplements or modifies the corresponding clauses in IEC 60704-1, so as to establish the test code for tumble dryers. When a particular subclause of Part 1 is not mentioned in this Part 2-6, 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 should 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.

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 the 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 publication will remain unchanged until the stability date indicated on the IEC web site under "http://webstore.iec.ch" in the data related to the specific publication. At this date, the publication will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
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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 tumble dryers.

It is recommended to consider the determination of noise levels as part of a comprehensive testing procedure covering many aspects of properties and performance of household tumble dryers.

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

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HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES – TEST CODE FOR THE DETERMINATION OF AIRBORNE ACOUSTICAL NOISE –

Part 2-6: Particular requirements for tumble dryers

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 single unit electric tumble dryers for household and similar use intended for placing on the floor against a wall, for building-in or placing under a counter, a kitchen worktop or under a sink, for wall-mounting or on a counter. For the purpose of this standard, washer-dryer combinations, when operated as a dryer, are considered as a tumble dryer.

NOTE 101 For washing function, see IEC 60704-2-4.

This standard is also applicable for gas-fired electric tumble dryers.

1.1.2 Types of noise

Replacement:

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

1.1.3 Size of the 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 appliance under test fulfils the requirements specified in 1.3 of ISO 3743-1 and ISO 3743-2.

1.2 Object

Addition:

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

NOTE 101 For determining and verifying noise emission values declared in product specifications, see IEC 60704-3.

1.3 Measurement uncertainty

Replacement:

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The estimated values of standard deviations of sound power levels, determined according to this standard, are:

Table 101 – Standard deviations of sound power levels

Standard deviation dB	
σ_r (repeatability)	σ_R (reproducibility)
0,4	0,8

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 values indicated in Table 102 apply:

Table 102 – Standard deviations for declaration and verification

Standard deviation dB		
σ_P (production)	σ_t (total)	σ_M (reference)
0,7 to 1,0	1,1 to 1,3	1,5

2 Normative references

This clause of Part 1 is applicable except as follows:

Addition:

IEC 61121: —[1], *Tumble dryers for household use – Methods for measuring the performance*

IEC 60456:2010, *Clothes washing machines for household use – Methods for measuring the performance*

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

3 Terms and definitions

This clause of Part 1 is applicable except as follows.

Addition:

3.101
tumble dryer
appliance in which textile material is dried by tumbling in a rotating drum, through which heated air is passed

[1] To be published.

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3.102
rated capacity
maximum mass in kg of dry textiles of a particular defined type, which the manufacturer declares can be treated in the tumble dryer on the programme selected. If the rated capacity is not declared, it shall be deduced from the free inside volume of the drum, according to the ratio 1 kg / 24 l

Note 1 to entry: The rated capacity should be the same as the one used for measuring the drying performance and energy consumption according to IEC 61121.

3.103
cotton test load
textile load consisting of towels only, as defined in Annex B of IEC 61121:—.

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.

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:

Prior to noise measurement, filters if any, shall be cleaned according to the manufacturer's instructions.

If, according to the manufacturer's instructions, the tumble dryer can be connected to an exhaust device, the standard exhaust as described in Figure 101 shall be connected. It consists of a pipe connected to a muffler. 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 inner diameter as that of the pipe, a length as specified in Figure 101 and shall not have parts

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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. Horizontal, vertical or inclined mounting of the pipe and the muffler is possible. A hose which is integrated in the appliance shall substitute the first straight pipe and the bend of the standard exhaust. It is directly connected to the muffler.

An exhaust hose delivered by the manufacturer shall not be used.

For appliances with alternative outlets, the measurements shall be made with the appliance connected to the outlet producing the highest sound power level.

Care shall be taken that the noise of the exhaust air does not noticeably influence the noise of the appliance.

6.1.3

Replacement:

Prior to noise measurements, the tumble dryer shall have been operated for at least two complete cycles. However, any load at rated capacity may be used for this operation.

6.1.4

Replacement:

Care shall be taken to be in accordance with the climatic conditions indicated in 6.3 of Part 1.

6.2 Supply of electric energy and of water or gas

6.2.2 and **6.2.3** Not applicable .

6.2.4

Addition

Gas-fired tumble dryers are operated at reference pressure with one of their reference gases according to their appliance category (see name plate of the appliance).

6.3 Climatic conditions

Addition

Care shall be taken to meet the climatic conditions as specified over the total duration of the standard test programme.

6.4 Loading and operating of appliances during tests

6.4.2

Replacement:

Tumble dryers are operated in the standard test programme according to 6.101, with a load according to 6.102.

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