# IEC 60704-2-3

Edition 3.0 2017-04

# INTERNATIONAL STANDARD

# NORME INTERNATIONALE

## Household and similar electrical appliances – Test code for the determination of airborne acoustical noise – Part 2-3: Particular requirements for dishwashers

## Appareils électrodomestiques et analogues – Code d'essai pour la détermination du bruit aérien – Partie 2-3: Exigences particulières pour les lave-vaisselle

IEC 60704-2-3:2017-04(en-fr)

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INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

COMMISSION
ELECTROTECHNIQUE
INTERNATIONALE

ICS 17.140.20; 97.040.40

ISBN 978-2-8322-4149-3

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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

## Part 2-3: Particular requirements for dishwashers

## FOREWORD

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International Standard IEC 60704-2-3 has been prepared by subcommittee 59A: Electric dishwashers, of IEC technical committee 59: Performance of household and similar electrical appliances.

This third edition cancels and replaces the second edition published in 2001 and Amendment 1:2005. This edition constitutes a technical revision.

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

a) it doesn't contain the description of an appropriate test enclosure because the test enclosure has been incorporated in IEC 60704-1:2010, Annex B;
b) the values of standard deviations of sound power levels determined according to this part are given in Clause 1;

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c) to prevent an appliance being programmed to recognize the test cycles, and reacting specifically to them, in this new edition an artificial soil is used in addition to the unsoiled load and the rinse aid container has to be filled. This artificial soil successive may build up a film on the load. Therefore, detergent also has to be used. An initial test has shown that no foam is to be expected.

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

| FDIS | Report on voting |
|---|---|
| 59A/212/FDIS | 59A/214/RVD |

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 2-3 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.

The relevant text of Part 1 as amended by this standard establishes the test code for dishwashers.

This Part 2-3 supplements or modifies the corresponding clauses in IEC 60704-1, so as to establish the test code for dishwashers. When a particular subclause of Part 1 is not mentioned in this Part 2-3, 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.

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.

Additional annexes are lettered AA, BB, etc.

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.

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# INTRODUCTION

The measuring conditions specified in this Part 2-3 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 dishwashers.

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 dishwashers.

NOTE As stated in the Introduction to IEC 60704-1:2010, 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 2-3: Particular requirements for dishwashers

## 1 Scope

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 dishwashers for household and similar use, with or without automatic programme control, for cold and/or warm water supply, for detachable or permanent connection to water supply or sewage systems, 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.

#### 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 electric dishwashers.

#### 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 appliance under test fulfils the requirements specified in 1.2 of ISO 3743-1:2010 and 1.3 of ISO 3743-2:1994.

### 1.2 Object

*Addition:*

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

NOTE 101 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 document are given in Table 101:

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

| **Standard deviation** (dB) | |
|---|---|
| $\sigma_r$ (repeatability) | $\sigma_R$ (reproducibility) |
| 0,5 | 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 in Table 102 apply:

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

| **Standard deviation** (dB) | | |
|---|---|---|
| $\sigma_P$ (production) | $\sigma_t$ (total) | $\sigma_M$ (reference) |
| 1,0 to 1,5 | 1,3 to 1,7 | 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 60436:2015, *Electric dishwashers for household use – Methods for measuring the performance*

## 3 Terms and definitions

This clause of Part 1 is applicable except as follows.

**3.3**
**operational cycle**

*Addition:*

starts with the initiation of the programme (excluding any user programmed delay) and ends when all activity ceases (i.e. the end of the cycle); at the end of the cycle, all activity in the dishwasher has ceased, i.e. the dishwasher may revert to off mode or it may have a steady state power consumption until the user opens the dishwasher or turns the unit off

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