

# INTERNATIONAL STANDARD

## NORME INTERNATIONALE

**Household and similar electrical appliances – Test code for the determination of airborne acoustical noise –**

**Part 2-18: Particular requirements for electric water heaters**

**Appareils électrodomestiques et analogues – Code d'essai pour la détermination du bruit aérien –**

**Partie 2-18: Exigences particulières pour les chauffe-eau électriques**



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## INTERNATIONAL ELECTROTECHNICAL COMMISSION

**HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES –  
TEST CODE FOR THE DETERMINATION  
OF AIRBORNE ACOUSTICAL NOISE –****Part 2-18: Particular requirements for electric water heaters**

## 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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IEC 60704-2-18 has been prepared by subcommittee 59C: Electrical heating appliances for household and similar purposes, of IEC technical committee 59: Performance of household and similar electrical appliances. It is an International Standard.

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

Draft	Report on voting
59C/262/CDV	59C/266A/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 is intended to be used in conjunction with IEC 60704-1:2021, *Household and similar electrical appliances – Test code for the determination of airborne acoustical noise – Part 1: General requirements*.

The relevant text of IEC 60704-1:2021 as amended by this publication establishes the test code for electrical water heaters.

This document supplements or modifies the corresponding clauses in IEC 60704-1:2021. When a particular subclause of IEC 60704-1:2021 is not mentioned in this document, that subclause is applicable as far as reasonable. Where this document states "addition", "modification", "replacement" or "deletion", the relevant requirements, test specifications or explanatory matter in IEC 60704-1:2021 should be adapted accordingly.

Subclauses, figures and tables that are additional to those in IEC 60704-1:2021 are numbered starting from 101.

Unless notes are in a new subclause or involve notes in IEC 60704-1:2021, 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, 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.

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).

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under [webstore.iec.ch](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 water heaters.

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 water heaters.

Special forms of electric water heaters generate remarkable noise, which is not common for conventional electric water heaters. In order to capture these special products, this document was developed. It provides a noise measurement procedure, which serves as an instrument for realizing technical improvements on the products and prevents false declarations in regulatory systems (e.g. European regulation on energy labelling).

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

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

### Part 2-18: Particular requirements for electric water heaters

#### 1 Scope

This clause of IEC 60704-1:2021 is applicable except as follows:

*Addition:*

These particular requirements apply to single-unit electric water heaters 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.

NOTE 1 Conventional electric water heaters that make use of the Joule effect in electric resistance heating elements normally do not produce any noise emissions. However, there are products with noise-producing components on the market. Examples of such components are motors and pumps e.g. for increasing water pressure.

NOTE 2 Noise of control elements is disregarded because of the sporadic character and its normally very low sound level.

This document does not apply to:

- combustion water heaters;
- water kettles;
- heat pump water heaters;
- conventional electric storage water heaters as defined in IEC 60335-2-21:2012, Clause 1;
- instantaneous electric water heaters without any noise-producing components such as motors and pumps.

#### 2 Normative references

This clause of IEC 60704-1:2021 is applicable except as follows:

*Addition:*

IEC 60379:—<sup>1</sup>, *Methods for measuring the performance of electric storage water-heaters for household purposes*

IEC 60704-1:2021, *Household and similar electrical appliances – Test code for the determination of airborne acoustical noise – Part 1: General requirements*

IEC 63159-1, *Electric instantaneous water heaters – Methods for measuring the performance – Part 1: General requirements*

IEC 63159-2-1, *Electric instantaneous water heaters – Methods for measuring the performance – Part 2-1: Multifunctional electric instantaneous water heaters*

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<sup>1</sup> Under development. Stage at the time of publication: IEC CDV 60379:2021.



IEC 63159-2-2, *Electric instantaneous water heaters – Methods for measuring the performance – Part 2-2: Efficiency of single point of use electric instantaneous water heaters*

### 3 Terms and definitions

This clause of IEC 60704-1:2021 is applicable except as follows:

#### 3.3 operational cycle

*Replacement of the definition:*

specific sequence of operational periods occurring while the appliance under test performs a complete work cycle; during the operational cycle, each operational period is associated with a specific process that can occur only once

*Addition:*

#### 3.101 noise-producing components

components that produce noise emissions during the water heating and/or the tapping process

Note 1 to entry: Components including motors, but not exclusively (e.g. pumps), are considered to be noise-producing components. Joule effect heating elements are not considered to be noise-producing components. Noise may be generated by boiling and cooking and by generating steam bubbles.

#### 3.102 control components

components that are used for the controlling purposes of the water heater

### 4 Measurement methods and acoustical environments

This clause of IEC 60704-1:2021 is applicable except as follows:

#### 4.1 General

*Addition after 2<sup>nd</sup> paragraph.*

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

#### 4.2 Direct method

*Addition:*

##### 4.2.101 Intensity method

Measurement in a free field, reverberation, or special reverberation room is often not possible because the appliance cannot be placed in such an environment. In this case, the intensity method shall be applied accordingly. The acoustical environments shall be applied as detailed in 4.4.1.

For the intensity method, the standard deviations as given in 4.5.2 apply.