

# INTERNATIONAL STANDARD

# NORME INTERNATIONALE

AMENDMENT 1  
AMENDEMENT 1

Household and similar electrical appliances – Safety –  
Part 2-49: Particular requirements for commercial electric appliances for keeping  
food and crockery warm

Appareils électrodomestiques et analogues – Sécurité –  
Partie 2-49: Règles particulières pour les appareils électriques à usage collectif  
destinés à maintenir au chaud les aliments et la vaisselle



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INTERNATIONAL  
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COMMISSION

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ELECTROTECHNIQUE  
INTERNATIONALE

PRICE CODE  
CODE PRIX



## FOREWORD

This amendment has been prepared by IEC subcommittee 61E: Safety of electrical commercial catering equipment, of IEC technical committee 61: Safety of household and similar electrical appliances.

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

FDIS	Report on voting
61E/617/FDIS	61E/620/RVD

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

The committee has decided that the contents of this amendment and the base publication will remain unchanged until the maintenance result 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- withdrawn,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
- amended.

**iTeh STANDARD PREVIEW**

NOTE The attention of National Committees is drawn to the fact that equipment manufacturers and testing organizations may need a transitional period following publication of a new, amended or revised IEC publication in which to make products in accordance with the new requirements and to equip themselves for conducting new or revised tests.

<https://standards.iteh.ai/catalog/standards/sist/70a6df80-ef29-4c76-970d-601a811236b4/iec-60335-2-49-2002-amd1-2008>

It is the recommendation of the committee that the content of this publication be adopted for implementation nationally not earlier than 12 months or later than 36 months from the date of publication.

### Title

*Replace the title by the following:*

## **HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES – SAFETY –**

### **Part 2-49: Particular requirements for commercial electric appliances for keeping food and crockery warm**

### INTRODUCTION

*Replace the second sentence of the second paragraph by the following:*

It also covers abnormal situations that can be expected in practice and takes into account the way in which electromagnetic phenomena can affect the safe operation of appliances.

*Replace the fifth paragraph by the following:*

When a part 2 standard does not include additional requirements to cover hazards dealt with in Part 1, Part 1 applies.

NOTE 1 This means that the technical committees responsible for the part 2 standards have determined that it is not necessary to specify particular requirements for the appliance in question over and above the general requirements.

This standard is a product family standard dealing with the safety of appliances and takes precedence over horizontal and generic standards covering the same subject.

NOTE 2 Horizontal and generic standards covering a hazard are not applicable since they have been taken into consideration when developing the general and particular requirements for the IEC 60335 series of standards. For example, in the case of temperature requirements for surfaces on many appliances, generic standards, such as ISO 13732-1 for hot surfaces, are not applicable in addition to Part 1 or part 2 standards.

## 1 Scope

*In the second paragraph, replace “hot cupboards” by “appliances for keeping food and crockery warm”.*

*Replace the third paragraph by the following:*

Examples of appliances that are within the scope of this standard are:

- **hot cupboards**, with or without **heated tops**;
- **heated tops**;
- **heated display cases**;
- **heated crockery dispensers**;
- **heated tables**;
- **radiant heaters**.

## 3 Definitions

### 3.1.9 *Add the following:*

Appliances incorporating **induction heating sources** are operated with the **induction crockery** placed on **induction trays**. All tray supports are loaded, but partial up to full load shall be possible.

All controls are set to maximum, and the **induction crockery** is half-filled with initially cold water. Covers (cloches) are in their position.

The appliances consist of several units, which can form up to three separated modules; they are connected together during operation. These units are the heating module with the **induction heating source**, the rack with the **coil carriers** and the enclosure with the supports for the **induction trays** including the **induction crockery**.

*Add the following new definitions:*

### 3.106

#### **heated table**

appliance designed for warm-holding on the surface

**3.107****radiant heater**

**stationary appliance** for keeping food and crockery warm by means of radiant heat

NOTE A part of the appliance can be swivelling.

**3.108****heating unit**

any part of an appliance that fulfils an independent cooking or heating function

**3.109****induction heating source**

heating source that operates by inducing eddy currents in **induction crockery**

**3.110****coil carrier**

insulation device containing the induction winding

**3.111****induction crockery**

crockery suitable to be heated by induction for heating up or keeping food warm

**3.112****induction tray**

tray adapted to **induction crockery**, as recommended by the manufacturer

**6 Classification**

Add the following subclause:

[IEC 60335-2-49:2002/AMD1:2008](https://standards.iteh.ai/catalog/standards/sist/70a6df80-ef29-4c76-970d-a90a857226bc/iec-60335-2-49-2002-amd1-2008)

<https://standards.iteh.ai/catalog/standards/sist/70a6df80-ef29-4c76-970d-a90a857226bc/iec-60335-2-49-2002-amd1-2008>

**6.2 Addition:**

Appliances normally used on a table shall be at least IPX3. Other appliances shall be at least IPX4.

**7 Marking and instructions****7.1 Add the following:**

Appliances incorporating **induction heating sources** shall also be marked with:

- the operating frequency or operating frequency range, in kilohertz (kHz);
- the total power input of all the induction **heating units** that can operate simultaneously, in watts (W) or kilowatts (kW), unless this is indicated in the instructions;
- the total power input of all the non-induction **heating units** that can operate simultaneously, in watts (W) or kilowatts (kW), unless this is indicated in the instructions.

NOTE 101 The power input to be marked or declared is the highest power input that any switch arrangement will allow.

Any cover giving access to **live parts** at a **working voltage** exceeding 250 V shall be marked with symbol IEC 60417-5036 (2002-10), or with the following warning:

WARNING – DANGEROUS VOLTAGE

Covers giving access to induction coils shall be marked with symbol IEC 60417-5140 (2003-04), or with the following warning:

CAUTION – MAGNETIC FIELD

NOTE 102 If it is not possible to mark these warnings on the cover, they may be placed close to the cover-retaining screws.

**7.6** *In the addition, delete the symbol for equipotentiality and add the following new symbols:*



[symbol IEC 60417-5041 (2002-10)] caution, hot surface



[symbol IEC 60417-5140 (2003-04)] non-ionizing electromagnetic radiation

**7.12** *Replace the second paragraph of the addition by the following:*

If symbols IEC 60417-5021 (2002-10), IEC 60417-5041 (2002-10) and IEC 60417-5140 (2003-04) are marked on the appliance, their meaning shall be explained.

*Add the following to the addition:* [IEC 60335-2-49:2002/AMD1:2008](https://standards.iteh.ai/catalog/standards/sist/70a6df80-ef29-4c76-970d-462551202049/iec-60335-2-49-2002/amd1-2008)

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The instructions for appliances incorporating **induction heating sources** shall include the substance of the following warning and information:

- WARNING: If the surface of coil carriers changes to darker colour or shows cracks, immediately disconnect the appliance from the supply.
- metallic objects such as kitchen utensils, cutlery, etc., shall not be placed on the induction tray within zones provided for the induction crockery since they could get hot;
- only use induction crockery and induction trays recommended by the manufacturer;
- users with heart pacemakers should consult with the manufacturer (unless specific details are given).

*Add the following:*

*Modification:*

The instruction concerning persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge is not applicable.

**7.12.1** *Add the following after the first paragraph of the replacement:*

For appliances incorporating swivelling **radiant heaters**, the installation instructions shall include detailed information concerning the area of swivelling with regard to the surrounding conditions. Information shall be given on how to limit the swivelling area by the installer.

The operation of appliances incorporating **induction heating sources** requires an increased instruction of the personnel. In addition, the instructions shall state that any repairs shall be carried out only by persons trained or recommended by the manufacturer.

### 7.15 Add the following:

For appliances incorporating **induction heating sources** in modular design, the additional label shall be fixed to the heating module (generator).

Add the following new subclauses:

**7.102** If a swivel **radiant heater** can be swung over adjacent areas or appliances, the instructions for use and installation shall indicate this range. If the temperature rise of the top of the adjacent area or appliance exceeds 65 K during the tests of Clause 11, or 125 K during the tests of Clause 19, the installation instructions provided by the manufacturer shall include the substance of the following warning, which shall also be included on a non-permanent label attached to the appliance:

WARNING: If this radiant heater is positioned adjacent to other areas or appliances, it is recommended that, within the range of the radiation, these areas or appliances be made of non-combustible material, otherwise, they shall be clad with a non-combustible heat-insulating material, and attention is to be paid to fire prevention regulations.

*Compliance is checked by inspection.*

**7.103** Food warming areas of **radiant heaters** adjacent to the appliance shall be permanently marked if the temperature rise during Clause 11 exceeds 65 K. This marking is not required if the swivelling area is between a bank of other appliances.

*Compliance is checked by inspection.*

**7.104** The side of the **radiant heater** case facing the user (front side) shall be permanently marked with symbol EC 60417-5041 (2002:10).

*Compliance is checked by inspection.*

**7.105** The zones on **induction trays** where the **induction crockery** is to be placed shall be marked permanently, e.g. by an appropriate design.

*Compliance is checked by inspection.*

## 10 Power input and current

### 10.1 Replace the text by the following:

#### 10.1 Modification:

*Instead of the first paragraph of the requirement, the following applies:*

The power input of appliances without **induction heating sources**, at **rated voltage** and at normal operating temperature, shall not deviate from the **rated power input** by more than the deviation shown in Table 1.

The power input of appliances having only **induction heating sources**, at **rated voltage** and at normal operating temperature, shall not deviate from the **rated power input** by more than 10 %.

*The measurement is made before the controls are adjusted to the reduced setting.*



For appliances incorporating induction and non-induction **heating sources**, the following applies:

The power input of the **induction heating sources** and the non-induction **heating sources** is measured separately, in each case using a combination of **heating units** that can be on at the same time to give the highest power input. For the **induction heating sources**, the measurement is made before the controls are adjusted to the reduced setting.

For **induction heating sources**, the power input so measured shall not deviate from the power input marked or declared by the manufacturer (see 7.1) by more than 10 %. For non-induction **heating sources**, the power input so measured shall not deviate from the power input marked or declared by the manufacturer (see 7.1) by more than the deviation shown in Table 1 for **heating appliances**.

In addition, the power input of the appliance when the **induction** and non-induction **heating sources** are operated simultaneously shall not deviate from the **rated power input** by more than 10 %.

*Addition:*

NOTE 101 For appliances having more than one **heating unit**, the total power input may be determined by measuring the power input of each **heating unit** separately (see also 3.1.4).

## 11 Heating

## iTeh STANDARD PREVIEW

Add the following subclause: [standards.iteh.ai](https://standards.iteh.ai)

### 11.1 Addition:

[IEC 60335-2-49:2002/AMD1:2008](https://standards.iteh.ai/catalog/standards/sist/70a6df80-ef29-4c76-970d-199b877236bc/iec-60335-2-49-2002-amd1-2008)

[https://standards.iteh.ai/catalog/standards/sist/70a6df80-ef29-4c76-970d-](https://standards.iteh.ai/catalog/standards/sist/70a6df80-ef29-4c76-970d-199b877236bc/iec-60335-2-49-2002-amd1-2008)

For **radiant heaters**, 11.101 applies.

*Add the following subclause:*

### 11.3 Addition:

NOTE 101 If the measurements can be unduly influenced by emissions from an **induction heating source**, i.e. the magnetic field, this must be taken into account.

In general, the use of thermocouples is not recommended because of the expected faulty heating-up of the thermocouples caused by the **induction heating source**. For example, the temperature rise of the **induction heating source** can be determined by using a platinum resistance, preferably of high resistance, with twisted connecting wires. The platinum resistances are placed on the hottest point of the winding so as to influence as little as possible the temperature to be measured.

### 11.4 Replace the first paragraph of the replacement by the following:

The non-induction **heating units** of the appliance are operated under **normal operation** at 1,15 times the power input marked or declared.

**Induction heating units** are operated simultaneously and supplied separately at the most unfavourable voltage between 0,94 times minimum **rated voltage** and 1,06 times maximum **rated voltage**.

If it is not possible to switch on all heating elements or **induction heating sources** at the same time, the test is made with each of the combinations that the switch arrangement will allow, the highest load possible with each switching arrangement being in circuit.

**11.7** Replace the text of the replacement by the following:

*Appliances incorporating **induction heating sources** are operated at maximum setting of the controls for one cycle, which consists of a heating-up phase and a keeping warm phase.*

*Appliances without **induction heating sources** are operated until steady conditions are established.*

NOTE 101 The duration of the test on non-induction appliances may consist of more than one cycle of operation.

Add the following subclause:

**11.8** Addition:

NOTE 101 The crockery itself is regarded as functional surface.

Add the following new subclause:

**11.101** For **radiant heaters**, the temperature rise limit of 65 K applies to the areas, including walls, which are reached by the radiation. If this temperature rise limit is exceeded, the requirements of 7.102 apply.

## 19 Abnormal operation

**19.1** Add the following:

*Appliances incorporating **induction heating sources** are also subjected to the tests of 19.101 and 19.102.*

*For **radiant heaters**, 19.103 applies.*

**19.2** Add the following:

*Appliances incorporating **induction heating sources** are operated fully loaded, with empty **induction crockery** without covers (cloches) in their position, until steady conditions are established.*

Add the following subclause:

**19.3** Addition:

***Induction heating sources** are supplied with a voltage of 1,06 times the **rated voltage**.*

Add the following subclause:

**19.13** Modification:

*For appliances incorporating **induction heating sources** having **working voltages** above 250 V, the following test voltages apply:*

- 1 000 V is increased to  $1,2 \times U + 700$  V;
- 2 750 V is increased to  $1,2 \times U + 2\,450$  V;
- 3 750 V is increased to  $2,4 \times U + 3\,150$  V.

where *U* is the **working voltage**.

*Addition:*

*The temperature of the induction windings shall not exceed the values specified in Table 8.*

*Add the following new subclauses:*

**19.101** Appliances incorporating **induction heating sources** shall be constructed so that the risk of fire, mechanical hazard or electric shock is obviated as far as is practicable in the event of incorrect operation or the development of defects in control devices or circuit components.

*Compliance is checked by applying any form of operation or any defect in the relevant circuits which may be expected in normal use while the appliance is operated under **normal operation at rated voltage** or at the upper limit of the **rated voltage range**. Only one fault condition is reproduced at a time, the test being made consecutively.*

NOTE Examples for fault conditions are:

- drop-out of contactors and of electromagnetic components;
- failure of motors to start;
- drop in voltage supply, re-appearance of the voltage, voltage interruptions of up to 0,5 s;
- fault conditions specified in 19.11, as applicable.

Examination of the appliance and its circuit diagrams will generally show the fault conditions to be simulated.

**19.102** Appliances incorporating **induction heating sources** shall be constructed so that a small piece of metal being situated on a **coil carrier** shall not cause the temperature of the windings of this **coil carrier** to exceed the relevant values specified in Table 8, or shall not lead to a damage of the insulation of this **coil carrier**.

*Compliance is checked by placing a piece of flat mild steel, 2 mm thick and having dimensions 100 mm x 20 mm, in the most unfavourable situation on a **coil carrier**. The appliance is supplied at **rated voltage**, all controls are set to their maximum.*

**19.103** For **radiant heaters**, the limit of 125 K temperature rise applies to the areas, including walls, which are reached by the radiation. If this temperature rise limit is exceeded, the requirements of 7.102 apply.

## **21 Mechanical strength**

*Replace the text by the following:*

This clause of Part 1 is applicable except as follows.

### **21.1 Addition:**

*The impact test is also applied to the **coil carriers**.*