

# INTERNATIONAL STANDARD

# NORME INTERNATIONALE

Household and similar electrical appliances – Safety –  
Part 2-3: Particular requirements for electric irons

Appareils électrodomestiques et analogues – Sécurité –  
Partie 2-3: Exigences particulières pour les fers à repasser électriques

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## INTERNATIONAL ELECTROTECHNICAL COMMISSION

**HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES –  
SAFETY –****Part 2-3: Particular requirements for electric irons**

## 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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This part of International Standard IEC 60335 has been prepared by IEC technical committee 61: Safety of household and similar electrical appliances.

This sixth edition cancels and replaces the fifth edition published in 2002 including its Amendment 1 (2004) and its Amendment 2 (2008). It constitutes a technical revision.

The principal changes in this edition as compared with the fifth edition of IEC 60335-2-3 are as follows (minor changes are not listed):

- some notes have been converted to normative text (20.1, 21.102, 22.106, 24.4, 25.5, 25.14);
- hoses that are subjected to the pressure test have been identified (22.7);
- the types of flexible cord that can be used are clarified (25.7).

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

FDIS	Report on voting
61/4342/FDIS	61/4353/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 is to be used in conjunction with the latest edition of IEC 60335-1 and its amendments. It was established on the basis of the fifth edition (2010) of that standard.

NOTE 1 When "Part 1" is mentioned in this standard, it refers to IEC 60335-1.

This part 2 supplements or modifies the corresponding clauses in IEC 60335-1, so as to convert that publication into the IEC standard: Safety requirements for electric irons.

When a particular subclause of Part 1 is not mentioned in this part 2, that subclause applies as far as is reasonable. When this standard states "addition", "modification" or "replacement", the relevant text in Part 1 is to be adapted accordingly.

NOTE 2 The following numbering system is used:

- 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.
- <https://standards.iteh.ai/catalog/standards/sist/fde88dac-75a4-49a4-9b61-2a8e54af1c8f/iec-60335-2-3-2012>

NOTE 3 The following print types are used:

- requirements: in roman type;
- *test specifications: in italic type;*
- notes: in small roman type.

Words in **bold** in the text are defined in Clause 3. When a definition concerns an adjective, the adjective and the associated noun are also in bold.

A list of all parts of the IEC 60335 series, under the general title: *Household and similar electrical appliances – Safety*, 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
- amended.

NOTE 4 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.

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.

The following differences exist in the countries indicated below:

- 5.7: The ambient temperature is  $27\text{ °C} \pm 5\text{ °C}$  (India).
- 6.1: Class 0 and Class 0I irons are not allowed (Indonesia, India).
- 11.8: For the test with the iron on the pointed support, all the temperature rise limits apply (USA).
- 13.2: The test circuit and some leakage current limits are different (India).
- 19.4: The test is also carried out with the iron on the pointed supports (USA).
- 21.101: The drop test is different (USA).
- 22.105: The endurance test is different (USA).
- 25.7: Polyvinyl chloride cords are not allowed (USA).
- 25.14: The flexing test is different (USA).

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## INTRODUCTION

It has been assumed in the drafting of this International Standard that the execution of its provisions is entrusted to appropriately qualified and experienced persons.

This standard recognizes the internationally accepted level of protection against hazards such as electrical, mechanical, thermal, fire and radiation of appliances when operated as in normal use taking into account the manufacturer's instructions. 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.

This standard takes into account the requirements of IEC 60364 as far as possible so that there is compatibility with the wiring rules when the appliance is connected to the supply mains. However, national wiring rules may differ.

If an appliance within the scope of this standard also incorporates functions that are covered by another part 2 of IEC 60335, the relevant part 2 is applied to each function separately, as far as is reasonable. If applicable, the influence of one function on the other is taken into account.

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.

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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.

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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.

An appliance that complies with the text of this standard will not necessarily be considered to comply with the safety principles of the standard if, when examined and tested, it is found to have other features which impair the level of safety covered by these requirements.

An appliance employing materials or having forms of construction differing from those detailed in the requirements of this standard may be examined and tested according to the intent of the requirements and, if found to be substantially equivalent, may be considered to comply with the standard.



## HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES – SAFETY –

### Part 2-3: Particular requirements for electric irons

#### 1 Scope

This clause of Part 1 is replaced by the following.

This International Standard deals with the safety of electric dry irons and **steam irons**, including those with a separate water reservoir or boiler having a capacity not exceeding 5 l, for household and similar purposes, their **rated voltage** being not more than 250 V.

Appliances not intended for normal household use, but which nevertheless may be a source of danger to the public, such as appliances intended to be used by laymen in shops, in light industry and on farms, are within the scope of this standard.

As far as is practicable, this standard deals with the common hazards presented by appliances, which are encountered by all persons in and around the home. However, in general, it does not take into account

- persons (including children) whose
  - physical, sensory or mental capabilities; or
  - lack of experience and knowledge prevents them from using the appliance safely without supervision or instruction;
- children playing with the appliance.

NOTE 101 Attention is drawn to the fact that

- for appliances intended to be used in vehicles or on board ships or aircraft, additional requirements may be necessary;
- in many countries additional requirements are specified by the national health authorities, the national authorities responsible for the protection of labour and similar authorities;
- additional requirements for pressure vessels may be specified by the national authorities responsible for the safety of pressure vessels.

NOTE 102 This standard does not apply to

- ironers (IEC 60335-2-44);
- appliances designed exclusively for industrial purposes;
- appliances intended to be used in locations where special conditions prevail, such as the presence of a corrosive or explosive atmosphere (dust, vapour or gas).

#### 2 Normative references

This clause of Part 1 is applicable.

### 3 Terms and definitions

This clause of Part 1 is applicable except as follows.

#### 3.1.9 Replacement:

##### normal operation

operation of the appliance under the following conditions

The iron is placed on its **stand** and is operated with its **thermostat** at the highest setting.

If the iron does not have a **thermostat**, the surface temperature at the mid-point of the centre line of the **soleplate** is maintained at  $250\text{ °C} \pm 10\text{ °C}$  by switching the supply on and off, or at the highest temperature if it is lower.

**Steam irons** with a separate water reservoir or boiler are operated with the water reservoir or boiler filled with water.

**Pressurized steam irons** incorporating the boiler are operated with or without water, whichever is more unfavourable.

Other **steam irons** are operated empty.

#### 3.101

##### steam iron

iron having means to produce and supply steam to the textile material during ironing

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Note 1 to entry **Steam irons** may incorporate a means for blowing steam onto clothes.

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#### 3.102

##### vented steam iron

**steam iron** in which steam is produced when the water contacts the **soleplate**, the water reservoir being at atmospheric pressure

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Note 1 to entry The water reservoir may be incorporated in the iron or connected to the iron by a hose.

#### 3.103

##### pressurized steam iron

**steam iron** in which steam is produced in a boiler at a pressure exceeding 50 kPa

Note 1 to entry The boiler may be incorporated in the iron or connected to the iron by a hose.

#### 3.104

##### instantaneous steam iron

**steam iron** in which small quantities of water are pumped from the water reservoir and in which steam is produced when the water contacts the walls of the boiler, the water reservoir and the boiler being at atmospheric pressure

Note 1 to entry The water reservoir and the boiler are connected to the iron by a hose.

#### 3.105

##### cordless iron

iron that is connected to the supply only when placed on its **stand**

Note 1 to entry **Cordless irons** may be directly connected to the supply mains during ironing by a **detachable part** to which the **supply cord** is fixed.

**3.106****soleplate**

heated part of the iron which is pressed against the textile material while ironing

**3.107****stand**

heel of the iron or a separate part provided with the iron, on which the iron is placed when at rest

Note 1 to entry The separate water reservoir or boiler may serve as the **stand**.

**4 General requirement**

This clause of Part 1 is applicable.

**5 General conditions for the tests**

This clause of Part 1 is applicable except as follows.

**5.2 Addition:**

If a **protective device** becomes open circuit during the tests of 21.101, the test is continued on a separate appliance.

NOTE 101 The test of 21.102 is carried out on a separate appliance. The additional test of 25.14 is carried out on a separate appliance.

**5.3 Addition:**

[IEC 60335-2-3:2012](https://standards.iteh.ai/catalog/standards/sist/88dac-75a4-49a4-9b61-2a8e54a1c81f/iec-60335-2-3-2012)

*For irons with a **thermostat**, the test of 21.101 is carried out before the test of Clause 11.*

*The test of 22.102 is carried out during the test of Clause 11.*

**5.101** *Irons are tested as **heating appliances** even if they incorporate a motor.*

**5.102** *If a **cordless iron** can also be directly connected to the supply mains during ironing, the relevant tests are applicable for both modes of operation.*

**6 Classification**

This clause of Part 1 is applicable.

**7 Marking and instructions**

This clause of Part 1 is applicable except as follows.

**7.1 Modification:**

Appliances shall be marked with their **rated power input**.

*Addition:*

Separate **stands** shall be marked with

- name, trademark or identification mark of the manufacturer or responsible vendor;
- model or type reference of the **stand**.

**Stands** of **cordless irons** shall be marked with their

- **rated voltage** or **rated voltage range**;
- **rated power input**.

**7.12 Addition:**

The instructions shall contain the substance of the following:

- the iron must not be left unattended while it is connected to the supply mains;
- the plug must be removed from the socket-outlet before the water reservoir is filled with water (for **steam irons** and irons incorporating means for spraying water);
- the filling aperture must not be opened during use. Instructions for the safe refilling of the water reservoir shall be given (for **pressurized steam irons**);
- the iron must only be used with the stand provided (for **cordless irons**);
- the iron is not intended for regular use (for travel irons);
- the iron must be used and rested on a flat, stable surface;
- when placing the iron on its stand, ensure that the surface on which the stand is placed is stable;
- the iron is not to be used if it has been dropped, if there are visible signs of damage or if it is leaking.

**7.15 Addition:**

For **steam irons** with a separate water reservoir or boiler, the total **rated power input** shall be marked on the part containing the supply terminals or **supply cord**.

## 8 Protection against access to live parts

This clause of Part 1 is applicable except as follows.

**8.1.2 Addition:**

NOTE 101 Connecting devices in **stands** of **cordless irons** are not considered to be socket-outlets.

## 9 Starting of motor-operated appliances

This clause of Part 1 is not applicable.

## 10 Power input and current

This clause of Part 1 is applicable.

## 11 Heating

This clause of Part 1 is applicable except as follows.

### 11.2 Replacement:

Irons are placed on their **stands** on the floor of a test corner and away from the walls. However, the separate water reservoir or boiler of **steam irons** is placed as near to the walls as possible. Dull black painted plywood approximately 20 mm thick is used for the test corner.

**Vented steam irons** with a separate water reservoir, **pressurized steam irons** and **instantaneous steam irons** are tested with the water reservoir empty and filled but without steam emission.

Irons, other than **cordless irons**, are also tested with the **soleplate** in the horizontal position placed on three pointed metallic supports that have a height of at least 100 mm. **Vented steam irons** with a separate water reservoir, **pressurized steam irons** and **instantaneous steam irons** are operated with the water reservoir or boiler filled.

For appliances provided with an automatic cord reel, one-third of the total length of the cord is unreeled. The temperature rise of the cord sheath is determined as near as possible to the hub of the reel and also between the two outermost layers of the cord on the reel. However, if the cord reel is incorporated in a part that is moved during ironing, the cord is completely unreeled.

For cord storage devices, other than automatic cord reels, that are intended to partially accommodate the **supply cord** while the appliance is in operation, 50 cm of the cord is unwound. However, for cord storage devices on parts that are moved during ironing, the cord is completely unwound. The temperature rise of the stored part of the cord is determined at the most unfavourable place.

### 11.4 Addition:

If the temperature rise limits are exceeded in appliances incorporating motors, transformers or **electronic circuits** and the power input is lower than the **rated power input**, the test is repeated with the appliance supplied at 1,06 times **rated voltage**.

### 11.7 Replacement:

Irons are operated until steady conditions are established.

When **vented steam irons** with a separate water reservoir, **pressurized steam irons** and **instantaneous steam irons** are tested with the iron placed on the pointed supports, steam is emitted in cycles, each cycle having a period of 10 s with steam emission and a period of 10 s with the steam emission interrupted.

### 11.8 Modification:

Except for **supply cords** connected to separate containers, the temperature rise limit for the insulation of wiring and **supply cords** is increased from 50 K to 60 K.

Addition:

During the test with the iron placed on the pointed supports, only the temperature rises of the insulation of internal wiring and flexible cords are measured. However, the temperature rise limits apply to the water reservoir and the hose of **pressurized steam irons** and