

# INTERNATIONAL STANDARD

# NORME INTERNATIONALE

Household and similar electrical appliances – Safety –  
Part 2-44: Particular requirements for ironers

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Appareils électrodomestiques et analogues – Sécurité –  
Partie 2-44: Exigences particulières pour les machines à repasser

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**HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES –  
SAFETY –****Part 2-44: Particular requirements for ironers**

## 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 60335-2-44 has been prepared by IEC technical committee 61: Safety of household and similar electrical appliances. It is an International Standard.

This fourth edition cancels and replaces the third edition published in 2002, Amendment 1:2008 and Amendment 2:2011. This edition constitutes a technical revision.

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

- a) the text has been aligned with IEC 60335-1:2020;
- b) some notes have been converted to normative text (1, 20.1, 22.103);
- c) exclusion of battery-operated appliances (Clause 1);
- d) introduction of accessible surface temperature limits (Clause 11).

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

| FDIS         | Report on voting |
|--------------|------------------|
| 61/6362/FDIS | 61/6414/RVD      |

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 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/standardsdev/publications](http://www.iec.ch/standardsdev/publications).

A list of all parts in the IEC 60335 series, published under the general title *Household and similar electrical appliances – Safety*, can be found on the IEC website.

This Part 2 is to be used in conjunction with the latest edition of IEC 60335-1 and its amendments unless that edition precludes it; in that case, the latest edition that does not preclude it is used. It was established on the basis of the sixth edition (2020) 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: Particular requirements for ironers.

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.

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.

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.

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.

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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.

Guidance documents concerning the application of the safety requirements for appliances can be accessed via TC 61 supporting documents on the IEC website:

<https://www.iec.ch/tc61/supportingdocuments>

This information is given for the convenience of users of this International Standard and does not constitute a replacement for the normative text in this standard.

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.

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 publications, basic safety publications and group safety publications 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.

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 that 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.

NOTE 3 Standards dealing with non-safety aspects of household appliances are:

- IEC standards published by TC 59 concerning methods of measuring performance;
- CISPR 11, CISPR 14-1 and relevant IEC 61000-3 series standards concerning electromagnetic emissions;
- CISPR 14-2 concerning electromagnetic immunity;
- IEC standards published by TC 111 concerning environmental matters.

# HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES – SAFETY –

## Part 2-44: Particular requirements for ironers

### 1 Scope

This clause of Part 1 is replaced by the following.

This part of IEC 60335 deals with the safety of electric **ironers** for both commercial and household and similar purposes, their **rated voltage** being not more than 250 V for single-phase appliances and 480 V for other appliances.

Appliances not intended for normal household, but which nevertheless can 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.

Examples of appliances within the scope of this standard are:

- **ironing presses** for one-person operation;
- **mangles**;
- **rotary ironers** for one-person operation;
- **trouser presses**.

As far as is practicable, this standard deals with the common hazards presented by appliances that 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 knowledgeprevents them from using the appliance safely without supervision or instruction;
- children playing with the appliance.

Attention is drawn to the fact that:

- for appliances intended to be used in vehicles or on board ships or aircraft, additional requirements can 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.

This standard does not apply to:

- **rotary ironers** for operation by more than one person. The roller length of such appliances normally exceeds 1,6 m in length;
- appliances intended 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);
- electric irons (IEC 60335-2-3);
- **battery-operated appliances**.

## 2 Normative references

This clause of Part 1 is applicable except as follows.

*Addition:*

IEC 60584-1, *Thermocouples – Part 1: EMF specifications and tolerances*

## 3 Terms and definitions

This clause of Part 1 is applicable except as follows.

### 3.1 Definitions relating to physical characteristics

#### 3.1.9 *Replacement:*

operation of the appliance under the following conditions

Appliances are operated without laundry.

**Ironing presses** are operated with the pressing surfaces separated as far as possible. Appliances that generate steam are operated in cycles with the water reservoir filled and with maximum steam emission. Each cycle consists of 10 s with the pressing surfaces in contact with each other and 10 s apart. Appliances that can generate steam or spray water are also operated with the water reservoir empty.

**Rotary ironers** are operated with the movable surface raised and lowered in cycles. Each cycle consists of 24 s with the pressing surfaces in contact with each other and 6 s apart.

**Trouser presses** are operated with the pressing surfaces in contact with each other.

**Mangles** are operated with the rollers in contact with each other.

Note 101 to entry: The mangle cloth is not removed.

### 3.5 Definitions relating to types of appliances

#### 3.5.101

##### **ironer**

appliance in which the laundry is supported by a padded surface and having a heated surface that can be brought into contact with the laundry

#### 3.5.102

##### **rotary ironer**

**ironer** in which the laundry is passed between a heated surface and a padded roller that is rotated by a motor

Note 1 to entry: **Rotary ironers** can have more than one heated surface.

#### 3.5.103

##### **ironing press**

**ironer** in which the surface supporting the laundry and the heated surface are substantially flat

Note 1 to entry: **Ironing presses** can have means to generate steam or to spray water.

#### 3.5.104

##### **trouser press**

appliance having a pair of flat surfaces, one or both of which can be heated and that can be closed together with trousers positioned between them

**3.5.105****mangle**

appliance for ironing laundry by unheated rollers that are pressed together and rotated by a motor

Note 1 to entry: **Mangles** can have a cloth, one end of which is attached to one of the rollers and on which the laundry is placed for ironing.

**3.6 Definitions relating to parts of an appliance****3.6.101****functional surface**

surface that is intentionally heated by an internal heat source and has to be hot to carry out the function for which the appliance is intended

Note 1 to entry: An example is the heated sheath of pressing surfaces.

**4 General requirement**

This clause of Part 1 is applicable.

**5 General conditions for the tests**

This clause of Part 1 is applicable.

**6 Classification**

This clause of Part 1 is applicable.

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**7 Marking and instructions**

This clause of Part 1 is applicable except as follows.

**7.1 Addition:**

Appliances shall be marked on or near lampholders with the maximum power input of replaceable illumination lamps as follows:

lamp max. ... W

The word "lamp" may be replaced by symbol IEC 60417-5012 (2002-10).

Appliances intended to be supplied with compressed air shall be marked with the maximum air pressure in megapascals.

**7.12 Addition:**

The instructions for **mangles** shall state that the appliances shall be disconnected when not in use and when the mangle cloth is being replaced.

The instructions for **ironing presses** in which steam is generated under pressure shall state that the filling cap shall not be removed during use. Instructions for the safe refilling of the water reservoir shall be given.

## 8 Protection against access to live parts

This clause of Part 1 is applicable.

## 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 Modification:

*Appliances normally used on a floor or table are placed away from the walls of the test corner.*

*Separate steam generators of ironing presses are placed as near as possible to the walls of the test corner.*

### 11.3 Addition:

*Where the external accessible surfaces are suitably flat and access permits, then the test probe of Figure 101 is used to measure the temperature rises of external accessible surfaces specified in Table 101. The probe is applied with a force of  $4\text{ N} \pm 1\text{ N}$  to the surface in such a way that the best possible contact between the probe and the surface is ensured. The measurement is performed after a contact period of 30 s.*

*The probe may be held in place using a laboratory stand clamp or similar device. Any measuring instrument giving the same results as the probe may be used.*

### 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.*

### 11.6 Replacement:

*Combined appliances are operated as heating appliances.*

### 11.7 Replacement:

*Trouser presses incorporating a timer are operated for three cycles of operation without rest periods.*

NOTE 101 One cycle is the maximum operating period allowed by the timer.

*Other appliances are operated until steady conditions are established.*

Appliance outlets accessible to the user and socket-outlets accessible to the user are loaded with a resistive load that gives the marked **outlet load**.

**11.8 Modification:**

During the test, the temperature rises are monitored continuously and shall not exceed the values shown in Table 3 and Table 101.

Addition:

The temperature rise limits of motors, transformers and components of **electronic circuits**, including parts directly influenced by them, may be exceeded when the appliance is operated at 1,15 times **rated power input**.

The temperature rise of handles or grips of vents and air shutters shall not exceed the value specified in Table 3 for surfaces of handles, knobs, grips and similar parts which are held for short periods only in normal use.

**Table 101 – Maximum temperature rises for accessible external surfaces under normal operating conditions**

| Surface  | Temperature rise of external accessible surfaces <sup>a</sup><br>K                     |   |   |
|--|--|---|---|
|  | Surfaces of portable appliances situated on the floor – surfaces that are below 850 mm | Surfaces of appliances intended to be used on a work surface and surfaces of portable appliances that are at or above 850 mm when situated on the floor | Surfaces of appliances for commercial use |
| Bare metal   | 38   | 42  | 48  |
| Coated metal <sup>b</sup>                            | 42   | 49  | 59  |
| Glass and ceramic                                    | 51   | 56  | 65  |
| Plastic and plastic coating > 0,4 mm <sup>c, d</sup> | 58   | 62  | 74  |

NOTE 101 The temperature rise limits of knobs, grips, keyboards, keypads and similar parts are specified in Table 3.

<sup>a</sup> Temperature rises are not measured on:

- the underside of appliances intended to be used on a working surface or floor where these surfaces are inaccessible to a 75 mm diameter probe having a hemispherical end applied with a force not exceeding 1 N;
- the rear surface of appliances that, according to the instructions, shall be placed against a wall and where these surfaces are inaccessible to a 75 mm diameter probe having a hemispherical end, applied with a force not exceeding 1 N;
- **functional surfaces** and surfaces within 25 mm of **functional surfaces** that can become hot due to proximity to the **functional surface**.

<sup>b</sup> Metal is considered coated when a coating having a minimum thickness of 90 µm made of enamel or non-substantially plastic coating is used.

<sup>c</sup> The temperature rise limit applies also for plastic material having a metal finish of thickness less than 0,1 mm.

<sup>d</sup> When the thickness of plastic coating does not exceed 0,4 mm, the temperature rise limits of coated metal or glass and ceramic apply.

## 12 Charging of metal-ion batteries

This clause of Part 1 is not applicable.

## 13 Leakage current and electric strength at operating temperature

This clause of Part 1 is applicable.

## 14 Transient overvoltages

This clause of Part 1 is applicable.

## 15 Moisture resistance

This clause of Part 1 is applicable.

## 16 Leakage current and electric strength

This clause of Part 1 is applicable.

## 17 Overload protection of transformers and associated circuits (standards.iteh.ai)

This clause of Part 1 is applicable.

## 18 Endurance <https://standards.iteh.ai/catalog/standards/sist/7ae7b9b5-a082-4226-a8d9-197f5d7cb340/iec-60335-2-44-2021>

This clause of Part 1 is not applicable.

## 19 Abnormal operation

This clause of Part 1 is applicable except as follows.

### 19.2 Addition:

*Appliances are tested with their pressing surfaces in contact with each other, unless they automatically separate when the closing force is released.*

### 19.4 Addition:

*For appliances that generate steam, any control that limits the pressure during the test of Clause 11 is rendered inoperative.*

### 19.7 Addition:

**Mangles** are operated for 5 min.

### 19.9 Not applicable.